amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 47, No. 8 AUGUST 1979

FEATURED IN THIS ISSUE:

- ★ 40 CHANNEL DIGITAL SYNTHESISER FOR 2m FM
- ★ UHF TECHNIQUES
- ★ WEATHER RTTY
- ★ EARLY DAYS IN RADIO
- ★ REPEATERS AND 2m FM — NEW CHANNEL NUMBERING PLAN

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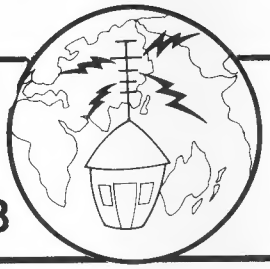

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"JULY and AUGUST SPECIALS"

Published monthly as its official journal by the Wireless Institute of Australia, founded 1910.

amateur radio

AUGUST 1979
VOL. 47, No. 8

PRICE: 90 CENTS
(Sent free and post paid to all members)

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Toorak, Victoria, 3142.

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Printers: EQUITY PRESS PTY. LTD.
50-52 Islington Street, Collingwood, 3066
Tel.: 41 5054, 41 5055

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Cover Photo

The Rt. Hon. A. A. Staley, Minister of the Postal and Telecommunications Department, addresses WIA Councillors and Delegates at the 1979 WIA Federal Convention held in April this year in Melbourne.

Also shown at the Official Table are David Wardlaw VK3ADW, WIA Federal President (left), Michael Owen VK3KI (right), and First Assistant Secretary of the P. and T. Dept., Mr. Jim Wilkinson (extreme right).

Mr. Staley gave a spirited and humorous lecture which was much appreciated by all present. Refer to last month's AR for details.

Note also the new WIA banner displayed on the rear wall (partly obscured). The banner is now available to Divisions for display at major amateur events.

(Photo by VK3UV)

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President — Mr. F. S. Parker VK2NFF
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.32, 52.1, 52.525, 144.1, 145.6, 146.4, Rptr. Ch. 3 — Gosford, Ch. 4 — Lismore, Ch. 5 Wollongong, Ch. 8 — Dural. Evening 0930Z. Relays on 160, 80 and 10m, VHF and Reptr. Ch. 3, Ch. 5, Ch. 8, and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0030Z 7045, 14090 kHz, Ch. 52, 0930Z 3545 kHz, Ch. 52.

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Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
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Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
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Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. Ross Greenaway VK6DA.
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.485, 52.290 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. I. Nicholls VK7ZZ
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Broadcasts— 7130 (AM) kHz with relays on 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

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Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

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VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
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VK6 — G.P.O. Box N1002, Perth, 6001.
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VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

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The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

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QSP

DR. KILDARE'S SECRET?

We know that Dr. Kildare can cope with almost any ailment but wonder how he does it. Could his secret be a Renulife Violet Ray High Frequency Generator? This wonderful instrument was advertised in the March 1919 issue of the "Electrical Experimenter". It transformed "electricity from your light socket" into "painless" electricity, the violet ray. It was claimed to treat successfully a great list of many ailments, given in alphabetical order, commencing with abscesses, anaemia, included baldness ,colds, dandruff, lameness, obesity, etc., etc., and concluded with weak eyes, wrinkles, warts and moles. It is easy to smile with seventy years hindsight, but are we any less gullible?

QSL POLLUTION

Writing in March 1979 Break-In, John Sainsbury, well known as an activator of rare DX under call signs such as VQ1HE, VS9AHE, 5ZHE and many more (licensed as ZL1WJ and now believed to be a VR1 in Tarawa), asks how often are you actually asked to QSL. In analysing his log books during the past 25 years of operating in several African and Middle East countries a 100 per cent QSL is not indicated. Only 40 per cent who said they would QSL actually did so, whereas he QSLed for just over 60 per cent of his contacts. Inwards, about 4 per cent (the really keen ones) sent cards direct to him, 51 per cent took not less than one year to arrive, 17 per cent exceeded two years and 18 per cent came in via QSL bureaux between 7 and 12 months; 5 per cent took over 5 years to arrive. His comments on the general QSL "mess" is an urgent need for discrimination. (P.S. 7Q7PBD goes along with the comments in his article — consigning well over 10,000 pieces of printed pasteboard to the rubbish dump when changing QTH half-way round the world must have some meaning, somewhere.) ■

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These are entitled to the use of the WIA emblem and the words: "WARC Amateur Supporter" in their advertising displays.

WIANEWS

EXAMINATIONS

The following is the text of letter 53.2.6 of 12th June addressed to the Institute by the Assistant Secretary, Licensing Policy and Operations, P. and T. Department:—

"Following recent negotiations between representatives of the Institute and Departmental officers, I have pleasure in forwarding several copies of the AOCP/AOLCP examination syllabus in its final format. I would also like to confirm that commencing with the August 1979 examination, a 50 question, 1½ hour, multi-choice paper is to be introduced for Section 'M' (Theory). Several copies of a sample paper are enclosed and quantities of both documents will be available for general distribution in the near future.

"It is intended that all future AOCP/AOLCP section 'M' (Theory) examinations will be multi-choice. However, for the August 1979 examination, papers in both old and new formats will be available so that candidates who have prepared for the usual seven question written essay type paper will not be disadvantaged by too little notice. All candidates will be advised of this arrangement by letter and will have the opportunity to choose either paper on the day of the examination.

"It would be appreciated if you could arrange for the above matters to be publicised through the Institute's normal channels as soon as practicable.

"Finally, I would like to thank those members of the Institute who gave assistance in the preparation of the AOCP/AOLCP syllabus and in particular your Federal Education Co-ordinator, Mr. G. Scott."

AMATEUR ADVISORY COMMITTEE

Another letter from the Department (51/1/1 of 11th June) sent forward a proposed draft constitution and rules of operation of Amateur Advisory Committees for Institute comments. This is designed to replace the original terms of reference dating back to the late 40s/early 50s.

Amateur Advisory Committees seem to have been originally seen as a buffer between the individual amateur and the Department in respect of minor infringements. The financial and staffing situation in the Department, following the disbandment of the old PMGs Department, has meant the discontinuance of the Amateur Advisory Committees in some States. In some others this particular service fell into disrepute amongst some amateurs by reason of individual misconceptions.

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The Executive must now give thought to the whole situation because this Committee service, or something for this purpose, is an essential part of the "self-regulation" of the amateur service. "Private" self-regulation by amateurs is preferred by most people instead of official citations, and that is the key to success, given responsible behaviour by those who are charged with operating whatever scheme is devised: and also, given acceptance by the amateur concerned, that he does need to re-examine his own equipment or procedures.

As mentioned in July WIANEWS, work is still proceeding on the revision of the Handbook.

Input for the 1979 Call Book closed off at the end of June. This proved possible by reason of a small extra edit and up-date of the EDP programme. If everything proceeds smoothly, distribution by mid-August comes closer to a reality.

WARC 79 DONATIONS LIST No. 4

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members for WARC 79:—

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An enormous amount of time and effort is going on behind the scenes in readiness for WARC 79 — the conference of prime importance to all spectrum users, particularly ourselves, due to begin next month.

Equally, much thought is going into what must be expected to happen after WARC 79 is at an end. Never before has so much effort been devoted to the amateur cause for such a vitally important international conference and its aftermath. ■

QSP — GET WITH THE STRENGTH

I make no apologies for the title, but I believe that we, as concerned amateurs and members of the WIA, must do all we can to increase the percentage membership of "our Institute".

The simplest, and most effective method is to "tell a friend" and the best way to start is to seek out local amateurs (or prospective amateurs) who live in your area. The 1979 WIA Call Book will assist in this.

As we gain strength in the Institute our combined voice will then be heard by more in the various spheres which concern us. Also the greater our strength the greater the number of talents we can call upon, enabling us to venture into areas of responsibility where the Institute should be, but cannot do so at this time due to lack of numbers.

Hence let us increase our membership and get with the strength.

F. S. PARKER VK2NFF,
VK2 President. ■

JOIN A NEW MEMBER NOW!

BETTER ANTENNAS VS. MORE POWER?

An article by ZL1OI in March 1979 Break-In analyses his contacts with over 2,500 USA and Canadian stations over several years on the 14 and 21 MHz bands. 59 per cent of the stations used input powers between 100 and 500W, 28 per cent above 500W and 13 per cent below 100W. The average power used was higher on the 14 MHz than the 21 MHz band. 48 per cent used yagis of heights from 10 to 25m, 21 per cent used verticals, 13 per cent quads and 13 per cent dipoles. Reports confirm that antennas have a far greater effect on signal strength than does the input power and that it is much more effective to improve an antenna than it is to increase power. Directional antennas are beneficial under present (sunspot) conditions, not so much for increasing signal strengths, but for reducing QRM from directions other than that of the wanted station. On 28 MHz very good communications are obtainable with small, simple and inexpensive antennas but higher gain antennas do however provide an advantage for DX phone operation.

AR BACK ISSUES

Normally most back issues of AR to 1972 are still available from Magpubs, Box 150, Toorak 3142, on payment of cover prices plus postage. However, June 1979 is out of stock in the 1979 series. ■

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SPECIFICATIONS

1. Code:	CW, RTTY (Baudot code), ASCII
2. Character:	alphabet, figures, symbols, special characters
3. Communication speed:	CW receiving: 15---220 characters/min. (automatic follow) transmitting: 17---176 characters/min. RTTY 45.45 baud, 50 baud, 56.88 baud, 74.2 baud ASCII 110 baud, 300 baud
4. Input:	AF input CW, RTTY Input impedance 500 ohms ASCII Input impedance 100 ohms TTL Level input (common to CW, RTTY and ASCII)
5. AF Input frequency:	CW 830Hz RTTY Mark: 2125Hz Space: 2295Hz, 2550Hz, 2975Hz changeable and Fine Tuning in the NORMAL state ASCII Mark: 2400Hz

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7. AFSK output frequency:	CW 830Hz RTTY Mark; 2125Hz Space; 2295hz, 2550Hz, 2975Hz changeable in the NORMAL STATE ASCII Mark; 2400Hz Space; 1200Hz
8. Display output:	VHF Australian CH4, Output impedance 75 ohms Composite video signals, Output impedance 75 ohms
9. Data output for a printer:	Data; 8 bits, Fan-out 1 (standard TTL) Strobe; 1 bits, Fan-out 1 (standard TTL)
10. Number of characters and number of pages to be displayed:	512 characters (32 characters x 16 lines)/page x 2 pages (total 1024 characters)
11. Battery backed-up memory:	32 characters x 7 channels
12. Buffer memory:	23 characters
13. Output for Oscilloscope:	Output impedance 1 megohm
14. AF output:	150mW (DC 12V), Output impedance 8 ohms
15. Power source:	DC +12V 1A, or DC +5V 1A
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Amateur Radio Division.

A 40 CHANNEL DIGITAL SYNTHESISER WITH 25/50 kHz STEPS FOR 2m FM

Lou Destefano VK3AQZ
13 Moody Place, Endeavour Hills 3802

This article describes a 40 channel synthesizer suitable for many of the older style crystal locked transceivers on 2m FM.

INTRODUCTION

With the proliferation of modern synthesized transceivers on two metres, it was becoming obvious that we were missing out on a lot of potential QSOs. Having a crystal locked rig with a mere 5 channels, a few quick calculations for 75 more sets of crystals and an 80 position switch caused calculator overflow, temporary blackout, and words to the effect "you must have rocks in the head". Rather than be left out on the rocks it was decided that a digital synthesizer was the logical answer.

Being an ardent home brewer it was decided that rather than succumb to temptation and buy that you-beaut rig, it was far better for the soul to embark on a home brew contraption. Using my usual design techniques for home brew projects — first how much? then a bit from this circuit, some from that circuit, and a small smattering of original brain shattering concepts, I embarked on the design (3 min. 15 secs.), construction (33 min. 23 secs.), and final debugging (33 hours 10 min.) of the unit about to be described.

The basic concept was that it had to interface directly into my existing rig — preferably without wires. This being impractical it was accepted that some minor mods would be required but these were to be absolutely minimum and done only whilst the rig was asleep. The rig consists of a Hepburn-Jenkins Carphone transmitter with 12 MHz crystals, and a copy of the MTR43 commercial receiver with 34 MHz crystals. The Hepburn-Jenkins transmitter uses a Colpitts harmonic multiplier for 36 MHz output. The receiver uses an MPF121 Colpitts oscillator, followed by an MPF121 quadrupler for mixing down to a first IF on 10.7 MHz. Both these circuits have proven to be easy to drive at 36/34 MHz by disconnecting the capacitor from base/gate to emitter/source, and feeding directly into the base/gate via a crystal socket.

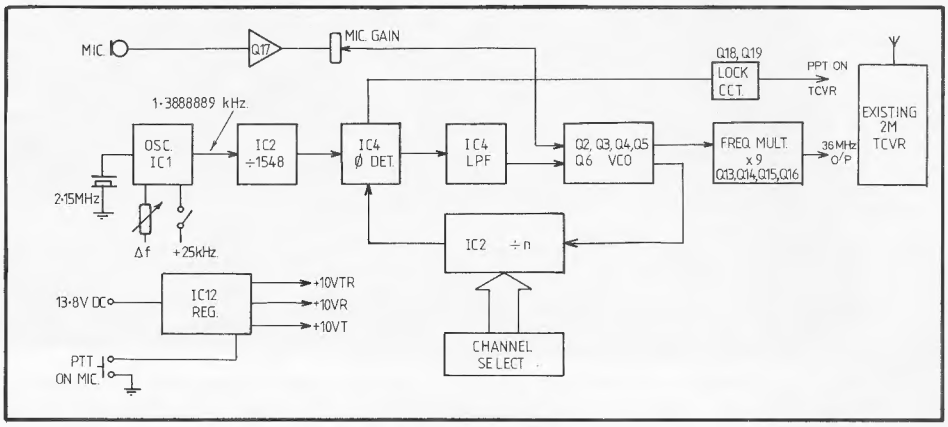


FIGURE 1: Block Diagram.

CIRCUIT DESCRIPTION

Fig. 1 shows the block diagram of the synthesizer. Fig. 2 shows the main part of the synthesizer containing the digital phase locked loop. The heart of the phase locked loop is the phase detector contained within the SCL4046.

THE PHASE DETECTOR

The phase detector compares 2 input square waves for frequency and phase and gives an output whose average DC component is proportional to the difference. A lowpass filter on its output gives smooth DC for controlling the frequency of one of the input signals. If one input is crystal-derived and the other is variable by means of the phase detector output, then when the loop is locked, the variable becomes as stable as the crystal. A simple numerical example will illustrate the use of this fact in a digitally controlled phase locked VFO. If we have a 1 MHz crystal-locked signal into one input, and a 1 MHz VFO with varicap diode control into the other input, then if the VFO is high in frequency, the phase detector will give a low average DC output. This when fed into the varicap of the VFO will cause it to shift low in frequency until the VFO is exactly on the same frequency as the crystal oscillator. The VFO becomes as stable as the crystal. If we now introduce between the VFO and the input of the phase detector a digital divider and arrange it to divide by 2, the input to the phase detector will become 500 kHz. The other input will still be 1 MHz from the crystal. The phase detector now gives a high average DC output because of the frequency difference. This in turn shifts the VFO UP in frequency until the phase detector has again 1 MHz from the digitally divided VFO into it. This means of course an actual VFO frequency of 2 MHz as we are dividing it by 2. If the division is changed to 3, the VFO will move up to 3 MHz and again it will be as stable as the crystal. Thus by varying the division ratio it would be possible with the correct type of varicap to shift the VFO up in steps of 1 MHz. The crystal oscillator input is called the reference frequency whilst the controlled VFO is called a "voltage controlled oscillator" or VCO. The reference frequency determines the step distance frequency whilst the digital division determines the number of steps (along with the range of the varicap in the VCO). The stepping distance can be 1 MHz as shown, or as low as 1 Hz.

The conventional phase detector gives an output which is a square wave whose period varies according to the frequency/phase difference. This square wave is filtered by a lowpass filter which generally would have to start attenuating at about one tenth of the reference frequency for good locking. A notch filter at the reference frequency may also be included to reduce the noise. The lockup time, capture range, and lock frequency range are highly dependent on this low pass filter design. The phase detector in the 4046 is of the digital memory type which only gives an output whilst the loop is unlocked. When the loop is locked or near locked, its output is an almost smooth DC. This means that a lowpass filter of greater bandwidth can be used resulting in fast response, wide locking range, and clean output. The 4046 also contains an emitter follower which in this circuit is used between the low pass filter and the VCO for added isolation. The IC also contains its own VCO but this is not used because it can only operate at

TABLE 1: PROGRAM CODES

Chn	Status	Tx O/P Freq	VCO O/P on Tx Mode	÷ n on Tx Mode	Rx Injection Freq (10.7 MHz IF)	VCO O/P on Rx Mode	÷ n on Rx Mode
40	Simplex	146.000	4.055 555 6	2 9 20	135.300	3.758 333 3	2706
41	Rept. 1 I/P	146.050	4.056 944 4	2 9 21	135.350	3.759 722 2	2707
42	Rept. 2 I/P	146.100	4.058 333 3	2 9 22	135.400		2708
43	Rept. 3 I/P	146.150		2 9 23			2709
44	Rept. 4 I/P	146.200		2 9 24			2710
45	Rept. 5 I/P	146.250		2 9 25			2711
46	Rept. 6 I/P	146.300		2 9 26			2712
47	Rept. 7 I/P	146.350		2 9 27			2713
48	Rept. 8 I/P	146.400		2 9 28			2714
49	Simplex	146.450		2 9 29			2715
50	Simplex	146.500		2 9 30			2716
51	Simplex	146.550		2 9 31			2717
52	Simplex	146.650		2 9 32			2718
53	Rept. 1 O/P	146.650		2 9 33			2719
54	Rept. 2 O/P	146.700	4.075 000 0	2 9 34	136.000	3.777 777 8	2720
55	Rept. 3 O/P	146.750		2 9 35			2721
56	Rept. 4 O/P	146.800		2 9 36			2722
57	Rept. 5 O/P	146.850		2 9 37			2723
58	Rept. 6 O/P	146.900		2 9 38			2724
59	Rept. 7 O/P	146.950		2 9 39			2725
60	Rept. 8 O/P	147.000		2 9 40			2726
61	Rept. 9 O/P	147.050		1 9 41			2727
62	Rept. 10 O/P	147.100		2 9 42			2728
63	Rept. 11 O/P	147.150		2 9 43			2729
64	Rept. 12 O/P	147.200		2 9 44			2730
65		147.250		2 9 45			2731
66		147.300		2 9 46			2732
67		147.350		2 9 47			2733
68		147.400		2 9 48			2734
69		147.450		2 9 49			2735
70		147.500		2 9 50			2736
71		147.550		2 9 51			2737
72		147.600		2 9 52			2738
73	Rept. 9 I/P	147.650		2 9 53			2739
74	Rept. 10 I/P	147.700		2 9 54			2740
75	Rept. 11 I/P	147.750		2 9 55			2741
76	Rept. 12 I/P	147.800		2 9 56			2742
77		147.850		2 9 57			2743
78		147.900		2 9 58			2744
79		147.950	4.109 722 2	2 9 59	137.250		2745
80		148.000	4.111 111 1	2 9 60	137.300	3.813 888 9	2746

low frequencies. It is bypassed to prevent it triggering the loop (which it did with my layout). The same phase detector also has a conventional square wave output on pin 1. This is used to indicate whether the loop is locked or not. When the loop is locked, no output occurs but when it is unlocked full amplitude pulses occur. These pulses are detected and fed to a lock indicator (one of the display decimal points) and a transmit inhibit circuit.

THE VCO

To allow the synthesizer to be used with some of the older style rigs it was necessary to have a VCO around 4 MHz. This also enabled the use of low noise, low power CMOS devices in the divider. The frequencies finally chosen for the VCO on transmit and receive are shown in Table 1. For Ch. 40 transmit simplex, the VCO frequency is 4.0555556 MHz and on receive, for a 10.7 MHz IF, it is 3.7583333 MHz. These frequencies are multiplied by 36 times to give the required outputs for receive and transmit on 2m. For my set-up, 9 times multiplication is done in the synthesizer unit after the VCO. For those rigs with IFs other than 10.7 MHz, the receive VCO frequency will have to be different and this is achieved by altering the division codes in the divider.

For 50 kHz spacing at 2m, the 4 MHz VCO must shift 50 kHz divided by our multiplication factor of 36. Thus to go from Ch. 40 to Ch. 41 on transmit, the VCO has to move from 4.055556 MHz to 4.0569444 MHz — a change of 1.3888889 kHz. This is the frequency we step the VCO by to go from one channel to the next. The same applies to the VCO frequencies on receive if the total multiplication is also 36 times. From our initial discussion on stepping a VCO in a phase locked loop, it means the crystal reference must be 1.3888889 kHz. If the multiplication factor from the VCO frequency to the final 2m frequency is different, or we wish to step in different increments, then a different reference frequency is needed. If we step in increments of 25 kHz on 2m with 36 times multiplication, our reference frequency would need to be 25 ÷ 36 kHz = 0.69444444 kHz. The lowpass filter after the phase detector is determined by the reference frequency and in my case it has a cutoff frequency (—3 dB point) of around 320 Hz. The VCO itself is a Hartley oscillator with high L to C ratio. The frequency is controlled by a pair of BA102 varicaps. These enable the VCO to be voltage controlled from 3.7 MHz to 4.2 MHz. The Hartley oscillator is the best circuit for such high L to C ratios. The VCO is brought to the centre operating frequency (with 5V DC on the varicaps) by adjusting the inductance. No trimmer capacitor can be used across the coil as this will considerably reduce the range of the varicaps.

The VCO is also fed with audio from a microphone amp. A few millivolts of audio is sufficient to deviate the VCO the full 8 kHz on 2m. The quality of the audio with such a modulator is very good and there is no sign of loop instability with speech. Those rigs which use a direct FM modulator by varying crystal reactance will have to either modulate the synthesizer as done here, or build a phase modulator into the rig just after the original crystal oscillator. Rigs already having a phase modulator after the original crystal oscillator need not modulate the synthesizer. The original mic. amp. in the rig can be used and fed back to the synthesizer or a simple amp. used as shown in Fig. 6. This consists of Q17 which matches my rocking armature mic. to the VCO. A small trimpot sets the audio level or deviation and a lowpass filter reduces the higher speech frequency FM sidebands. Clipping was not included as I speak softly. You can also try connecting a 50k mic. direclty to the loop via a small 50k trimpot and a 0.0022uF directly across the mic. to limit the top end of the speech. Most 50k mics have more than enough level to drive the loop directly.

The output of the VCO feeds a tuned amplifier with a low Q tuned circuit to ensure a bandwidth from 3.7 MHz to 4.2 MHz. The tuned amplifier feeds two emitter followers — one feeds the digital divider via a squaring amp. (Q5) and the other goes to the frequency multipliers.

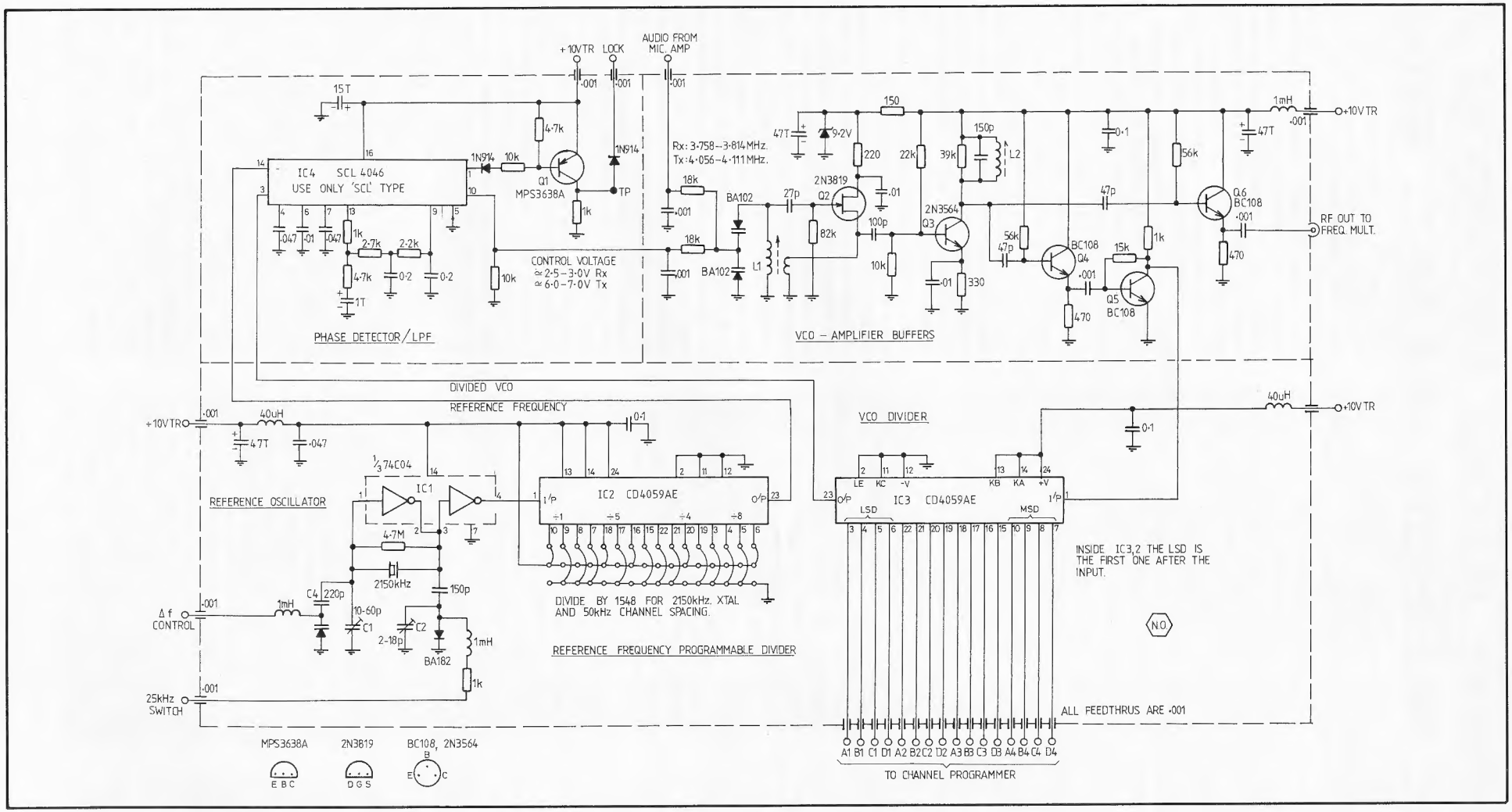


FIGURE 2A: 40 channel phase locked loop circuit for 2 metres FM.

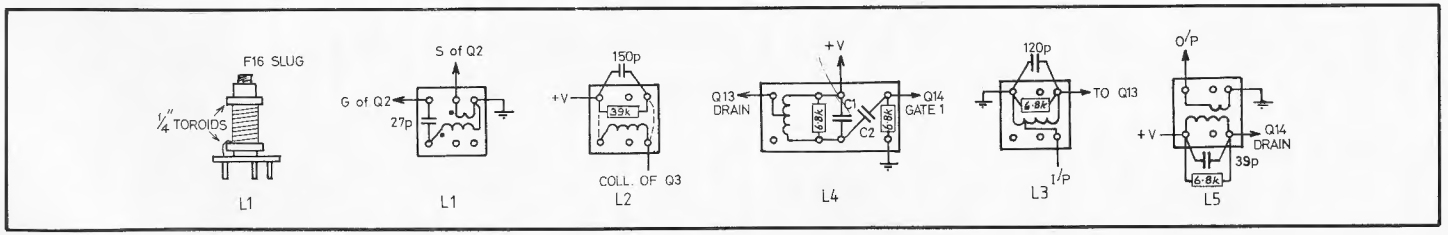


FIGURE 2B: Phase locked loop coil details.

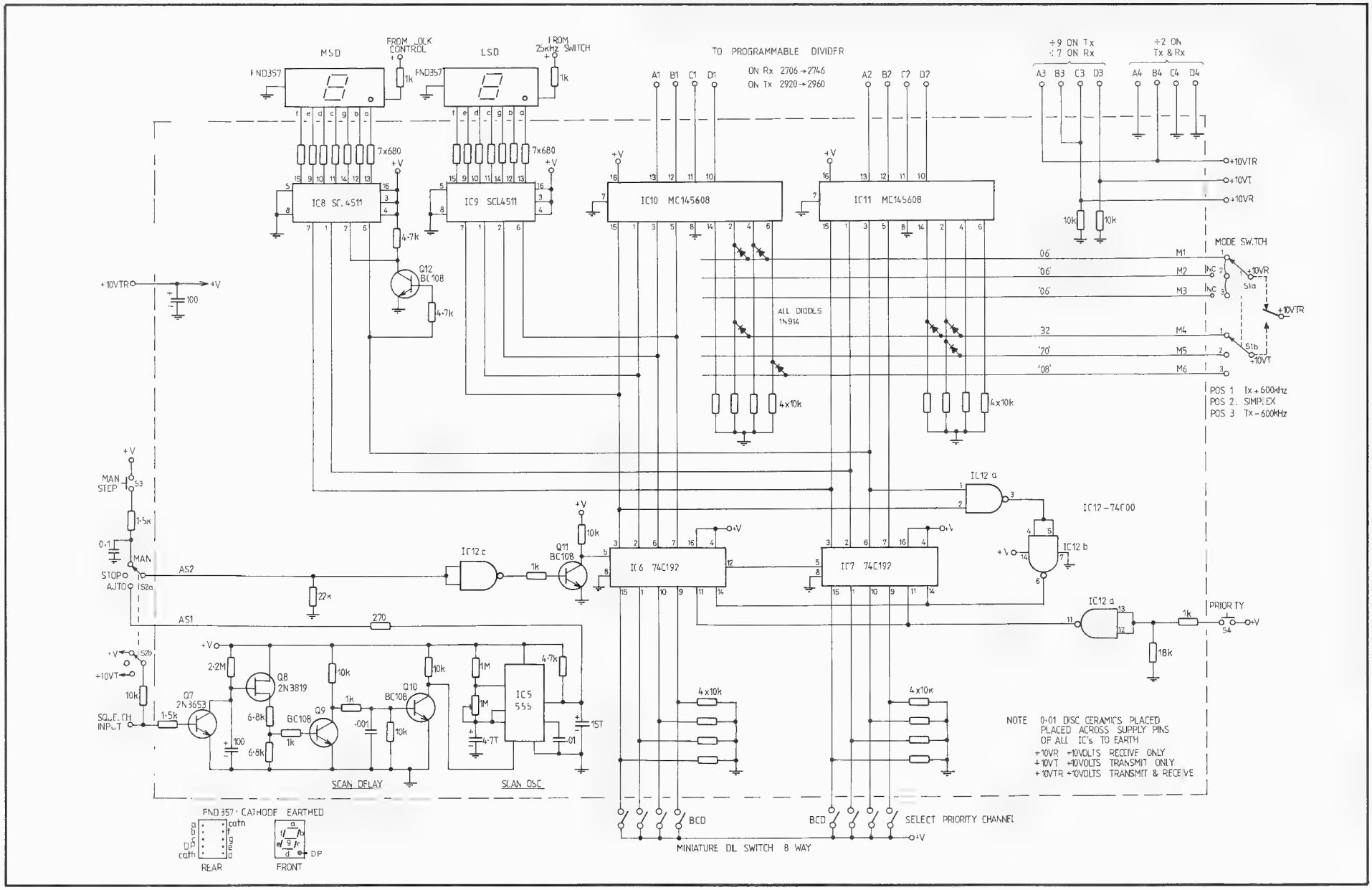


FIGURE 3: Circuit for 40 channel automatic scanner with one priority channel.

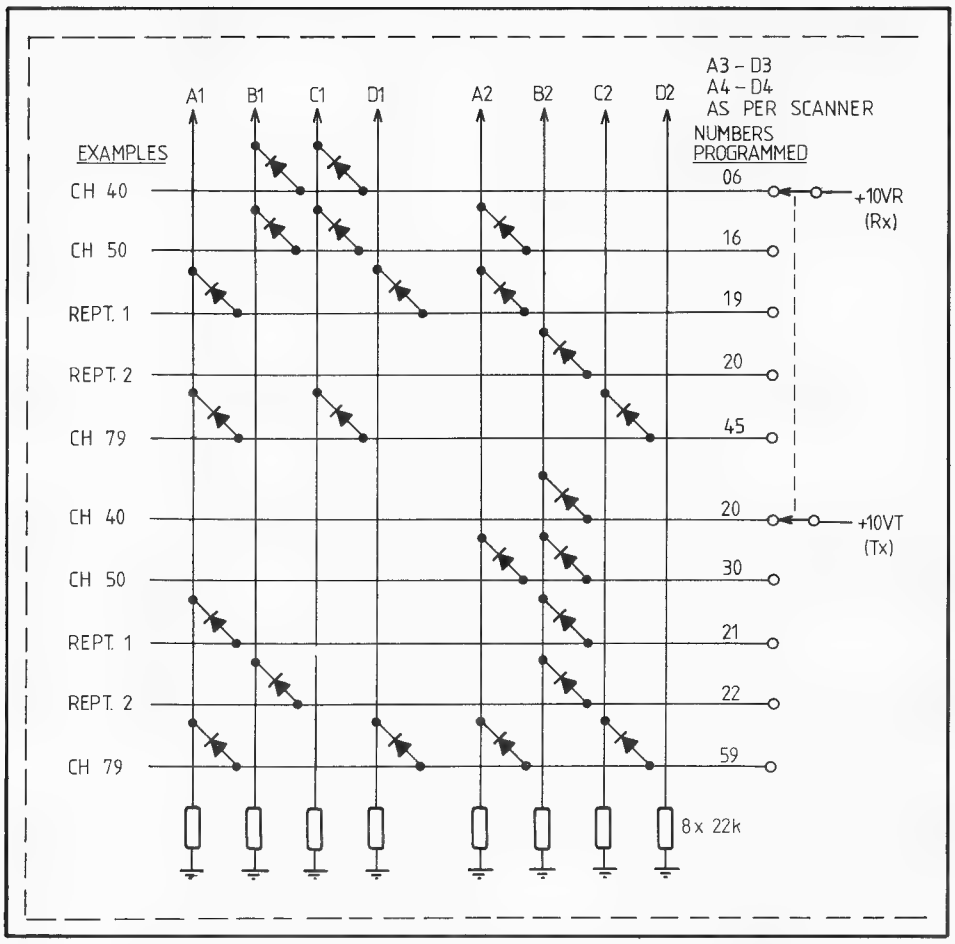


FIGURE 4: Simple diode-matrix channel select using two-pole switch.

Any low power RF transistor may be used in this section. The 56k base bias resistors are selected to give 5V DC (± 0.5V) at the emitters of the emitter followers. These resistors may need to be altered depending on the DC current gains of the transistors.

THE VCO DIVIDER

The output of the VCO feeds the digital divider via the amplifiers. The digital divider then feeds one input of the phase detector. The one used is the CD4059AE, which is a five decade BCD programmable divider capable of operating up to 4 MHz with a 10V rail and 6 MHz with a 15V rail. It divides the VCO down to the reference frequency for comparison in the phase detector. Table 1 lists the divisions need on Tx and Rx for moving from Ch. 40 to Ch. 80 in 50 kHz steps. The division ratio in IC3 is selected by putting logic highs (10V DC) and logic lows (0V DC) on the appropriate pins of the IC. E.g. to divide by 2920, the first decade must be programmed for 0, the next for 2, the next for 9, and the last for 2. The first decade in the chip, or the one closest to the VCO input, is programmed for the least significant digit which is zero in our example.

Its programme pins are labelled A1, B1, C1 and D1. The number one after the letter represents the least significant digit whilst the letter A signifies the least significant bit of the VCD code for that digit. The letter D signifies the most significant BCD bit of the digit. The least significant digit of 2920 is "0" and thus we must put the BCD code for 0 on pins 6, 5, 4 and 3, which is "0000" or all at 0V DC. The next digit must have the BCD code for 2, which is "0010". Thus pin 21 must have 10V DC on it, whilst pins 22, 20 and 19 have 0V DC on them. The third digit pins must have the BCD code for 9 on them, which is "1001". The most significant digit pins must have the BCD code for 2 on them, which is "0010". The fifth decade is disabled. It is the function of the channel select or programmer circuit in Fig. 3, Fig. 4 or Fig. 5 to provide these BCD codes to the divider for channel selection.

THE REFERENCE OSCILLATOR

IC1 is the crystal oscillator, which uses standard CMOS inverters with the crystal in the feedback path.

The output of the oscillator feeds another programmable divider the same as the VCO divider. The divider is programmed on the circuit board to give the correct reference frequency with almost any crystal in the range from 100 kHz to 4 MHz. A slight pulling of the crystal will allow those which are not an integral number of 1.3888889 kHz to be used. In my example I happened to have a 2.15 MHz crystal which when divided by 1548 gives 1.3888889 kHz. This approach allows greater flexibility than using discrete ICs and a crystal made to order. It works out cheaper also. The crystal oscillator contains VXO circuitry to enable it to shift the VCO for a 25 kHz offset on 2m (Ch. 40 to Ch. 40A). By altering the reference frequency by 0.238 Hz, the VCO moves 25 kHz on 2m. This represents a shift of 368 Hz at the crystal frequency of 2.15 MHz. Because the reference is actually shifted, the offset will not be exactly 25 kHz on all channels. The 50 kHz steps will be precise but the offset will vary, being about 1.25 kHz out on the lowest channel (Ch. 40 Rx) and the highest channel (Ch. 80 Tx). This is a limitation of using this method. The offset is achieved by switching a capacitor in and out with a switching diode connected to a toggle switch. A decimal point on the display or a LED is used to show on the display or an LED is used to show when the offset is in. When the switching diode is conducting, the reference frequency is for 50 kHz steps. The capacitor values used are for my crystal and these may have to be altered to suit your crystal. A varicap diode is also used for giving 5 kHz offset via a variable control.

CHANNEL SELECTION CIRCUITS

Figs. 3, 4 and 5 show alternative methods of deriving the BCD codes for channel selection. Fig. 3 shows a digital scanner circuit which is used for my base rig. This consists of a scan oscillator with auto stop from the receiver mute signal. The scan oscillator (IC5) gives pulses variable from about 3 per second every 3 seconds. The scan oscillator is stopped by putting an earth on pin 4. This occurs the moment the mute is opened by a signal. On my rig, the mute signal goes from 0.3V no signal to 1.5V with signal. This is buffered with an emitter follower in the rig and feeds Q7. From here it goes via amplifiers to IC5. A retriggerable delay is included to allow for breaks between overs. The delay occurs only when the mute closes. This delay is obtained from the capacitor across Q7. When the mute signal falls, the capacitor starts to charge towards the rail, and via the source follower, it removes the earth from pin 4 after about 12 seconds. If the mute opens during this 12 seconds the capacitor is discharged again by Q17, thus forming a retriggerable time delay. Note that on transmit, the oscillator should be stopped.

The output of the scan oscillator goes via the manual/auto switch to a 2 decade presettable counter. The counter output is in BCD form and increments one number on each positive edge of the scan pulse. The counter starts at "00" output for Ch. 40 and goes to "40" for Ch. 80. The counter resets on the count of 41 via IC1A. The counter feeds BCD to 7 segment decoder drivers which feed common cathode LED displays. The driver for the most significant digit has the number "4" permanently added by Q12 so that "40" is displayed when the counter output is "00".

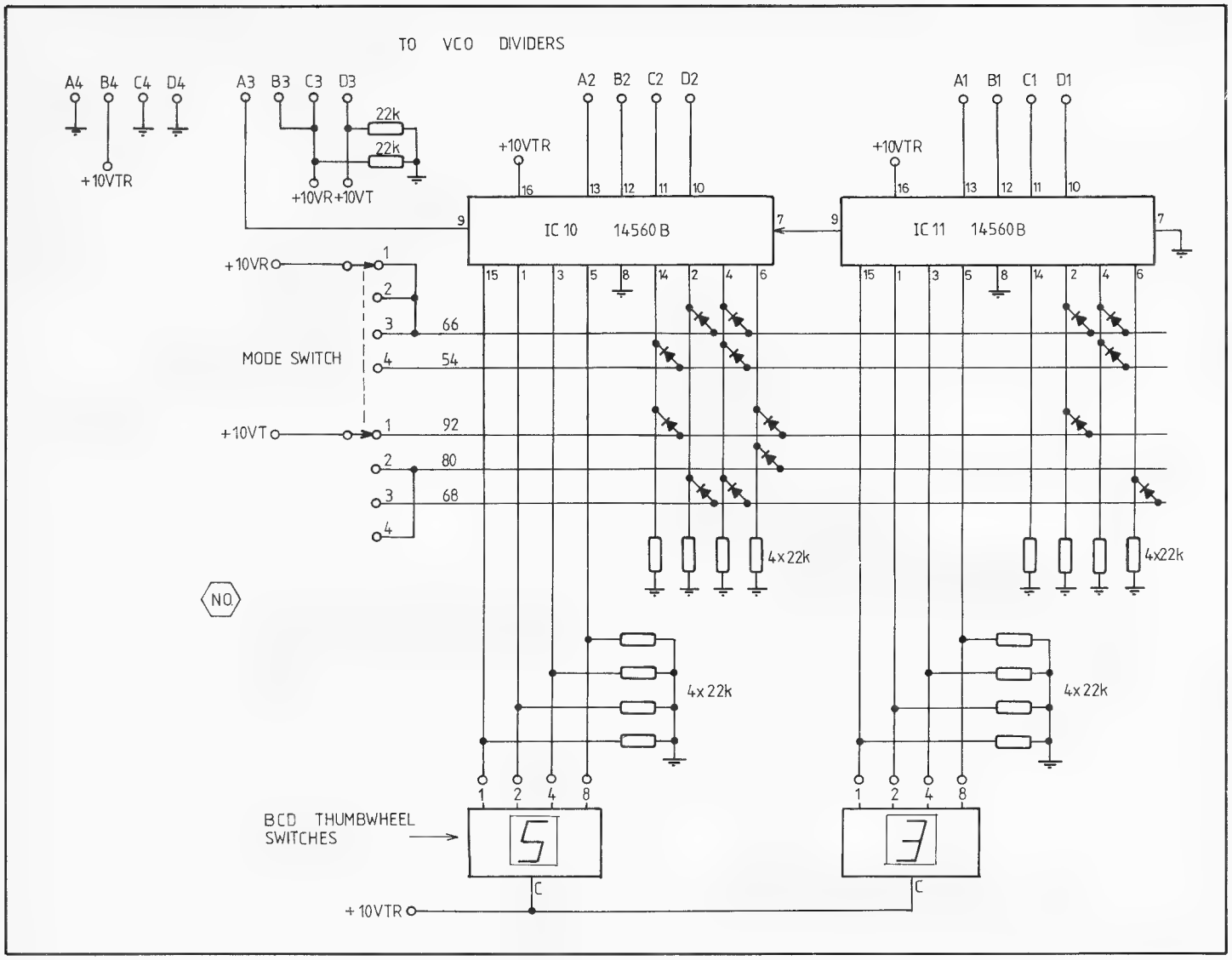
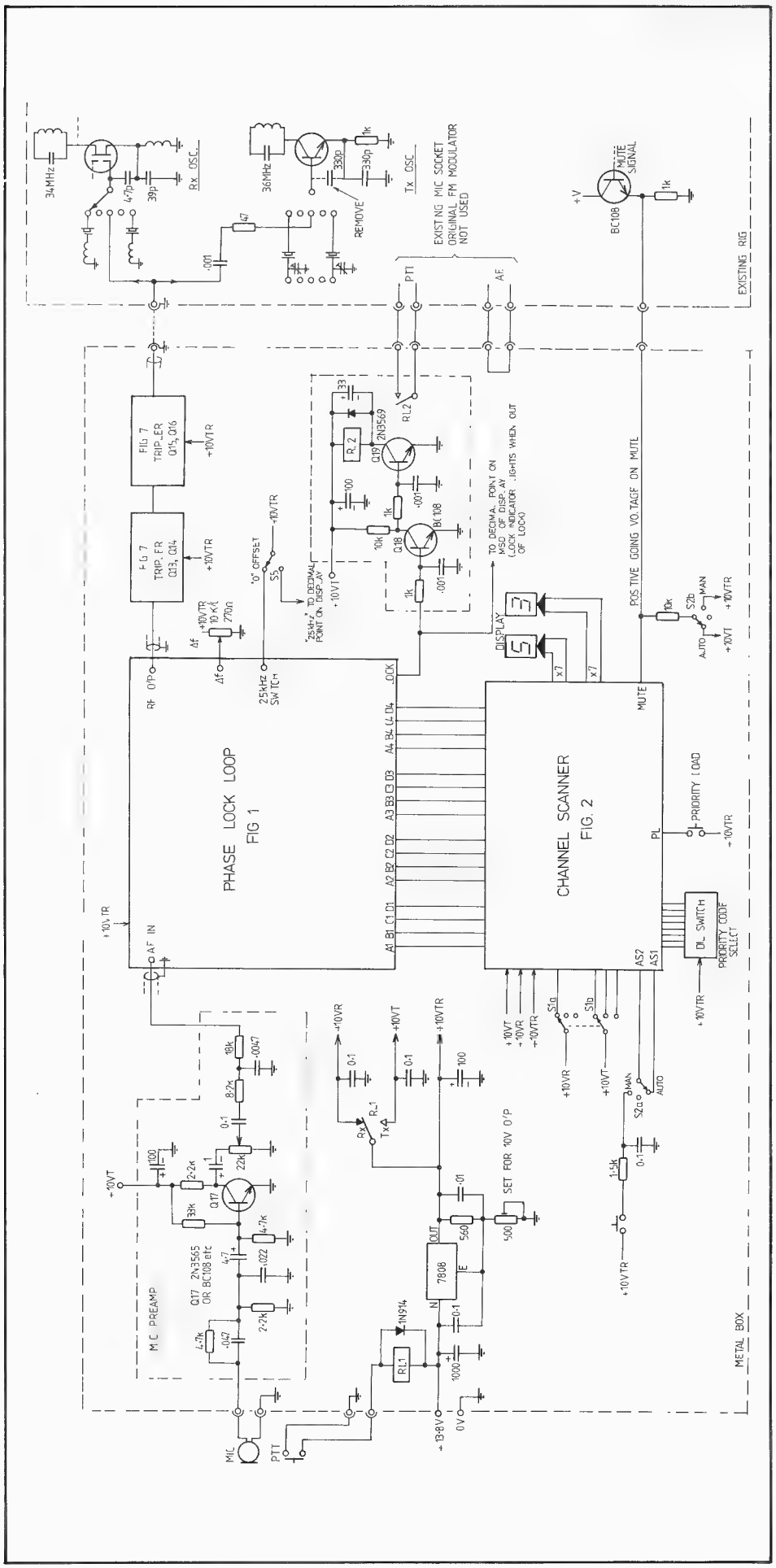


FIGURE 5: Channel selection using thumb-wheel switches.

The ICs used in the counter are presettable with a BCD code such that when the "load" input (pin 11) is set to logic low, the output disregards the pulses counted and immediately goes to the code on the preset inputs. This allows for selection of a priority channel. When power is first applied, the scanner always goes to the priority channel first. The priority code switch on my unit consists of an 8 way DIL switch mounted on the front panel. These inputs can also be used to select channels via a small calculator keypad.

The output of the scan counter feeds a group of normal binary coded decimal adders (NOT binary only adders). The adders are devices which add two BCD numbers giving a BCD result. They also contain a carry input and output for cascading. One set of inputs is fed from the scan counters whilst the other sets are fed from a small diode programmed matrix. The matrix is set up so as to give the channel select code to the VCO divider. An example will illustrate. On Ch. 40 Tx, we want the VCO divider to divide by 2920. For Ch. 40, the scan counter output will be "00" and thus we need to add the number 2920. If you study the code table for transmit, you will notice that the code number from Ch. 40 to Ch. 80 only changes in the two least significant digits, i.e. from 2920 to 2960. So for the 2 most significant digits we can permanently apply the BCD codes for 29. Thus all we need to do is add the number "20" for the two least significant digits, for all the transmit simplex channels. The number "20" is added by putting the appropriate logical levels on pins 14, 2, 4 and 6 of ICs 10 and 11. Logic zero is obtained via the 10k resistors to earth whilst logic high is via diodes and the mode switch. On receive, we need the BCD code for 2706 on Ch. 40 and 2746 on Ch. 80. Again, only the least significant digits change. On receive we need to add "06" to the scan counter output on all channels. Between Rx and Tx the most significant digit does not alter, thus the VCO divider pins can be hard wired for the number 2 (code word = 0010). The second most significant digit has to change from 9 on Tx to 7 on Rx and this corresponds to a code change from 1001 to 0111. This is done via the Tx/Rx relay. The change from 20 on Tx to 06 on Rx for the two least significant digits is done by selecting a different set of diodes in the matrix via the mode switch and the Tx/Rx relay. The same principle is used to select the different codes for repeater offsets. E.g., if we are listening on Ch. 54 repeater, the receive code we have is 2720. The scan counter is giving 14 and the matrix is adding 06. We now have to transmit 600 kHz lower to access the repeater. This represents Ch. 42 on Tx which has a code of 2922. Thus instead of adding 20 on Tx, we need to add 08 (14 from scan counter plus 08 = 22). Similar things happen on shifting +600 kHz on transmit and here we add 32. One point to note is that if the code required to the VCO divider changes in the third digit during scanning or channel selection, then a third NBCD adder or a transistor is needed. The PCB layout has this allowed for. This could happen with



different IFs or for more than 100 channels.

Fig. 4 and Fig. 5 show two alternate and cheaper methods for selecting channels. Fig. 4 uses a standard two pole switch plus diode matrix. The diode matrix selects the correct code for the least significant digits. A single pole switch can also be used if adders are incorporated to give the required offsets. A mode switch will reduce the number of positions needed. This is the method used in the IC22S. No display is used apart from the switch position as this could mean extra adders. Fig. 5 uses standard BCD thumbwheel switches. In this case, the display is on the switches and the code would go from "40" to "80", thus adders are needed to give the correct codes as well as provide Tx/Rx offsets, etc. Note carefully that with offset facilities it is possible to transmit outside the band. The necessary circuits for inhibiting transmission under these conditions can be complex and have not been used in my set-up.

THE FREQUENCY MULTIPLIERS

Fig. 7 shows the frequency multipliers used, these acting as triplers in my unit. Two are used in cascade with modified coils for the second tripler so as to arrive at 34/36 MHz. The circuit can also be used as a doubler if needed or just the buffer amplifier used. It depends on what frequencies you need for your rig. It is best to try and make the Rx and Tx multiplication factors the same as only one RF cable is needed to the set. If you have a rig with 4 MHz crystals on Tx, you can try driving the Tx circuit directly from the VCO buffer and use the required multiplication stages on Rx. Transmitters with 9 MHz or 18 MHz crystals are best retuned in the oscillator output to take 12 MHz or 24 MHz drive. For 24 MHz drive, the second multiplier would be used as a doubler by altering the coils slightly. FETS are used to ensure easy and clean tune-up. Bypassing is critical as it is possible to generate unwanted frequencies. All the tuned circuits have their Q lowered with 6k8 resistors to ensure they cover the Tx/Rx range. With some rigs it may not be necessary to employ frequency multipliers. In my case I could have used a 34/36 MHz VCO with a high speed TTL divided between it and the programmable divider. This divider would be set for a constant division by 9. The programmable divider would thus see the original design frequencies and all the programme codes shown would apply. This means a saving in space and less tune-up. It does need a 5V supply and transistors to get back to 10V logic levels. Very careful screening would be needed to stop the tenacious TTL pulses from generating noise. The choice is yours.

FIGURE 6 (Left): Interconnections.

INTERCONNECTIONS

Figure 6 shows the general interconnections between circuits. Power is fed to the unit via an 8 or 6 volt regulator biased for 10V output. The PTT on the microphone activates a small 12 volt battery relay which selects the correct codes for Rx and Tx. On Tx, the lock circuit feeds Q18 and Q19 which operate the transceiver PTT via the original mic. socket, if the loop is stable. A mic. amplifier (Q17) matches my mic. to the loop. If you wish, the mic. circuit in the rig can be used by feeding the loop via a socket and screened cable. RF is fed via a single coax. cable to the rig where it goes to an uncrystalled position of the original channel switch. It feeds the Rx Colpitts oscillator directly and in fact in my unit I did not have to remove the gate to source capacitor. It also goes to the Tx oscillator which, with the removal of the base emitter capacitor, becomes a straight 36 MHz amplifier. A 56 ohm resistor drops the level so as not to overdrive this amplifier. The original modulator will need to be disconnected if it frequency - modulates the oscillator directly. In my unit, going to an uncrystalled position automotically disables the internal modulator. Some rigs phase modulate the sinewave from the oscillator at the oscillator output tuned circuit. These should not need modulation of the synthesizer as they should modulate any signal passing through them. This means that the original mic. socket is used for the mic. In this case the PTT on the mic. will have to go to the synthesizer via another socket. With my set-up I can go back to crystals by simply reconnecting the Tx base emitter oscillator capacitor and disconnecting the plugs.

CONSTRUCTION

The basic loop is built on PCB1 which is double sided. One side is used as a ground plane whilst the other side has the tracks. The foil side is printed whilst the other side is protected during etching with masking tape. The component holes are then drilled and copper is cleared on the component side with a small drill. Those holes going to earth are not cleared and the component leads are soldered on both sides so as to tie the earths to the ground plane. Most of the components are mounted vertically to conserve space. Molex pins are used as IC sockets. The whole PCB is mounted in a small PCB box and all non-RF connections made via 0.001 uF feedthrough capacitors. Don't use a PCB without this ground plane as earthing in any phase locked loop is very important if noise is to be low. The coil base diagrams shown are for my layout and are viewed from the bottom. The components shown with these diagrams are mounted in the cans and must be miniature types. The RFCs are miniature Japanese upright types and the exact values are not really critical. One of the frequency triplers is also included on this PCB. The coil slugs are locked in place with correcting fluid,

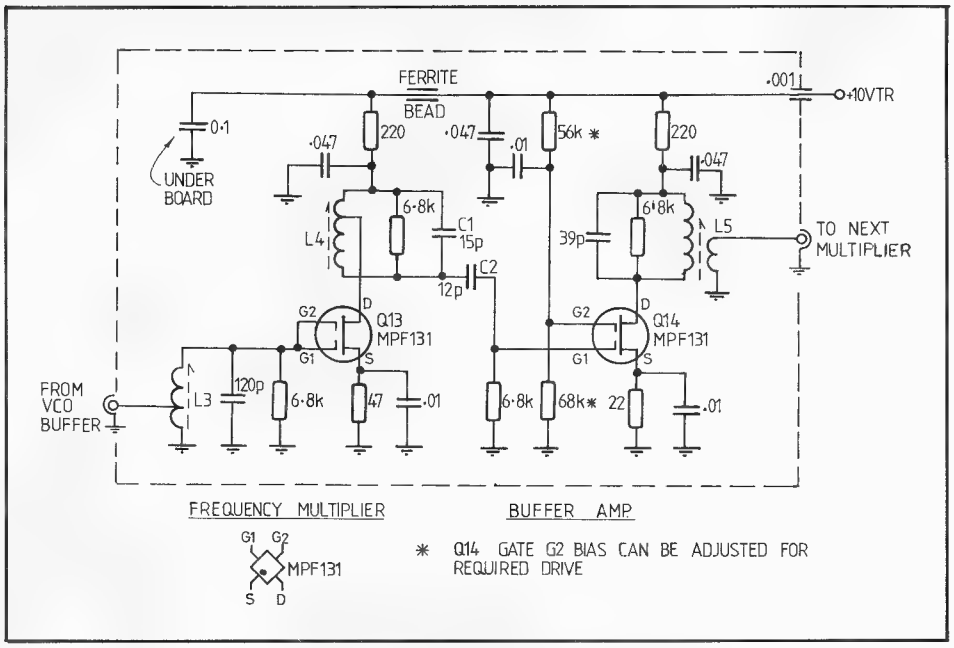


FIGURE 7: Frequency multiplier.

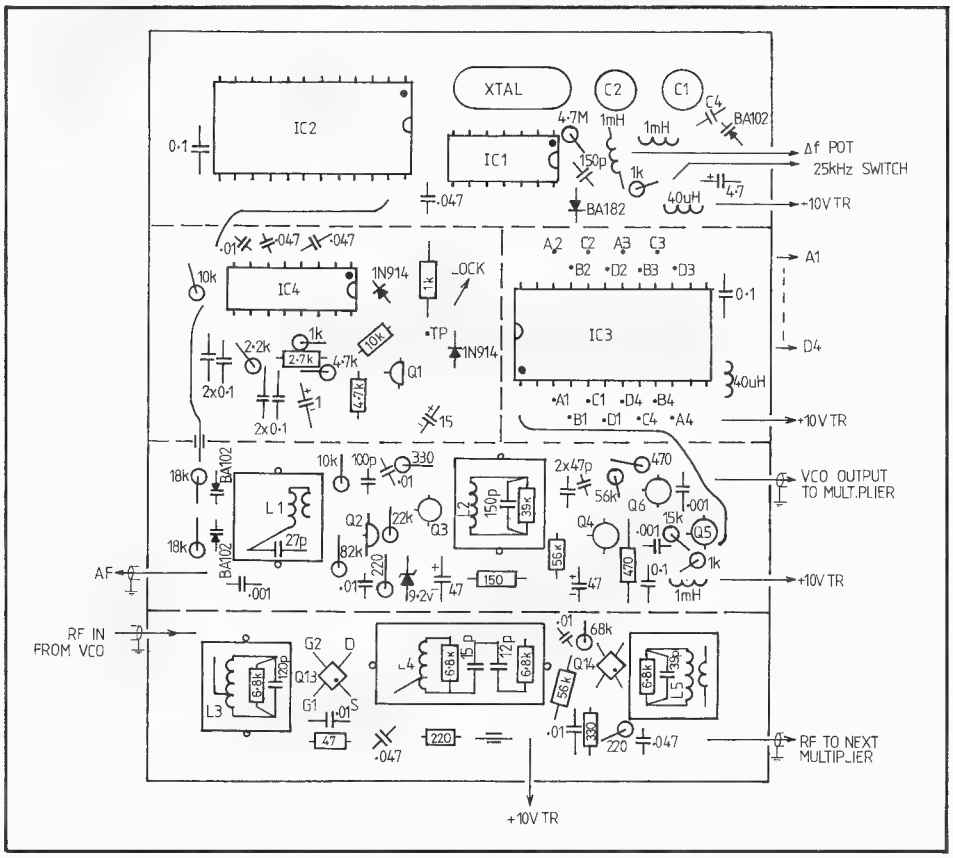


FIGURE 8: Component layout, phase locked loop.

the VCO coil being the most critical. Vibration in this coil will cause microphonics.

PCB2 has the scanner circuit on it and this is single sided with wire links to simplify the foil pattern. The scanner ICs have 0.01 uF disc ceramics across the supply pins under the board. Others are placed liberally around the board across the rails. The 10k resistors for the preset inputs of the scanner ICs are mounted near the LIL switch. An alternate arrangement for this section of the circuit is to use wire-wrap techniques.

The mic. amp., lock circuit, displays, etc., are all mounted on small pieces of

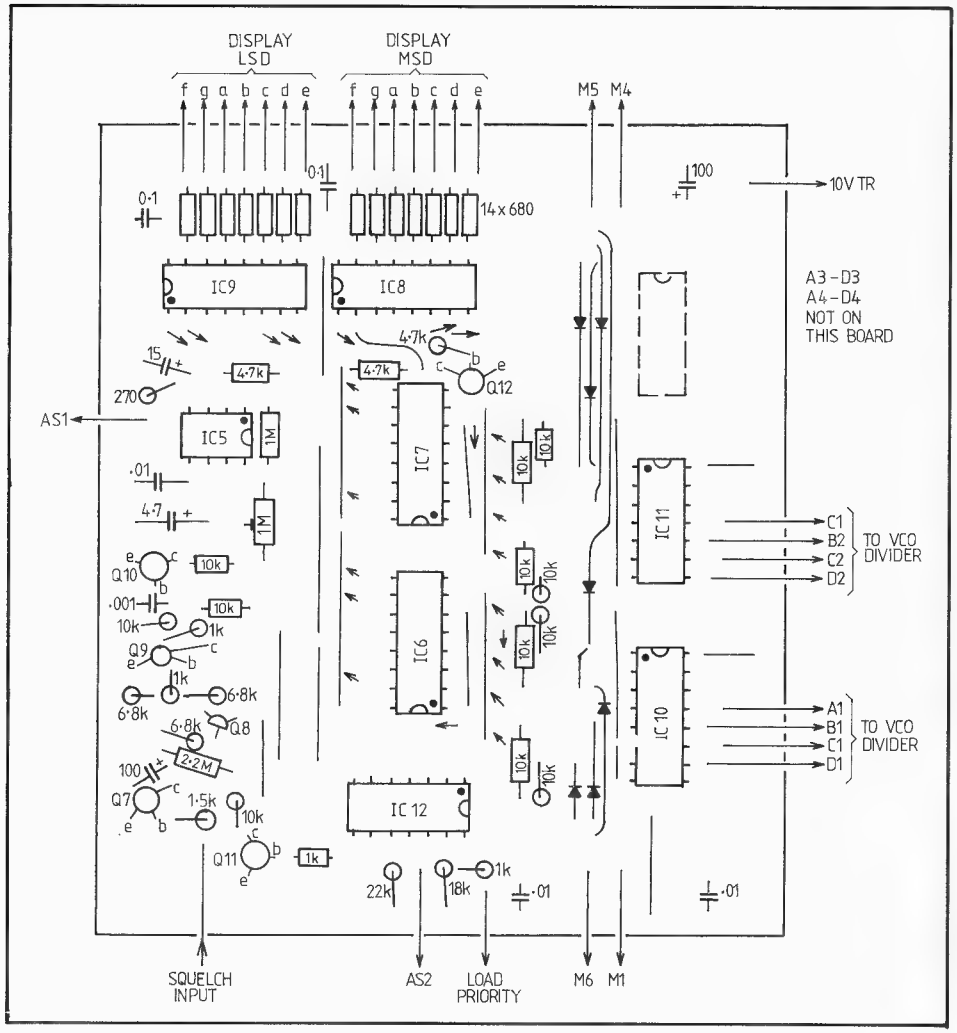
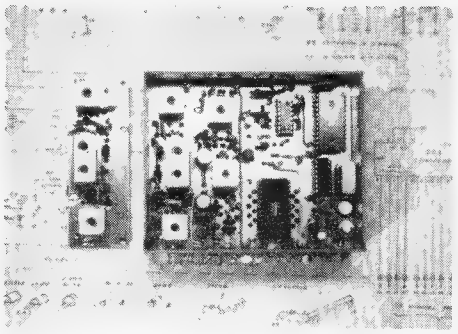
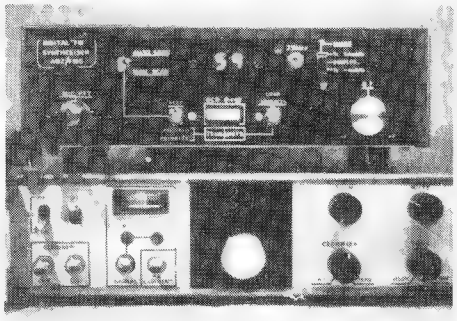


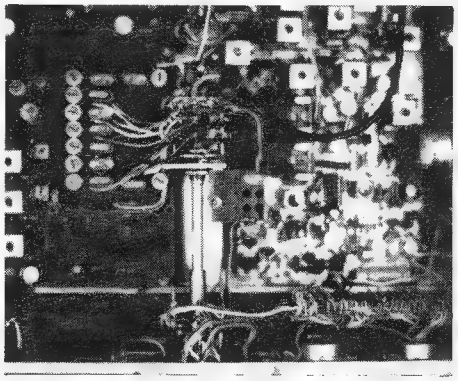
FIGURE 9: Component layout — automatic scanner.



The completed scanner.



Finished and working!



Final installation.

veroboard near the appropriate sockets, switches, etc.

ALIGNMENT

Tuning up the synthesizer is relatively easy. A frequency counter will help but is not essential. After applying power ensure that the regulator is giving 10V output by adjusting the trimpot. Next check the scanner or code circuit and dial up one of the repeater output frequencies. Make sure you have the correct code by checking with a multimeter on the VCO divider. Close the switch to the crystal VXO so that you don't have the 25 kHz offset, and set the frequency control midway. The next thing to do is ascertain you have the correct reference frequency or close enough to hear signals. This is best done with a frequency counter connected to pin 4 of IC1. Adjust C1 for the required crystal frequency. If you don't have a counter, don't despair as in all probability you will hear signals in the receiver once you have aligned the frequency multipliers — even if you have to swing C1 back and forth during alignment. Next adjust the VCO coil till the lock indicator goes out. If it doesn't it means that you are outside the range of adjustment. Listening on a receiver, using a GDO, or a frequency counter, will tell you where this oscillator is in frequency. A multimeter on pin 10 of IC4 will read low if the VCO frequency is high, and read high if the frequency is low. As soon as you are within range, this voltage will start to change and the lock indicator will go out. Once the loop is locked you can start to align the frequency multipliers. By listening on a receiver or using a GDO you can set the coils for the correct harmonics. Adjust them for maximum voltage across the source resistor of the following stage, always making sure you are tuning for the correct harmonic. Acting as doublers, the MPF131s will give more output than as triplers. Instability may occur if you have straight amplification. At this stage you should start to hear the repeater output so adjust the coils for maximum signal without over-driving the mixer. Over-driving the mixer will increase intermod and spurious responses. Use a resistor pad if you have too much drive. You should now be able to set the reference frequency more accurately for cleanest audio. A centre zero meter on the discriminator will help while listening to a repeater which you know is on frequency. This has now set the synthesizer for all the 50 kHz channels. Now check that the loop works over all channels and remains locked for both Tx and Rx codes.

With a multimeter on Pin 10 of IC4, you should get about 2.5V on Rx and 7.5V on Tx. These voltages will depend on the range of your varicaps and the setting of the VCO coil. The greater the varicap range, the closer to 5V they will be. Loss of lock at the band edges will require another pair of diodes or more careful setting of the VCO coil. When I first got the loop going I had very limited lock range. This was traced eventually to the unbypassed VCO in the 4046. Bypassing it cured the problem along with severe microphonics.

Now check for the 25 kHz offset. You will probably need someone with a synthesized rig to check this or a good frequency counter. Juggling the values of C2 and C3 will enable you to get the required offset. You may have to reset C1 for the 50 kHz channels. Patience is needed — or a good frequency counter. Some crystals

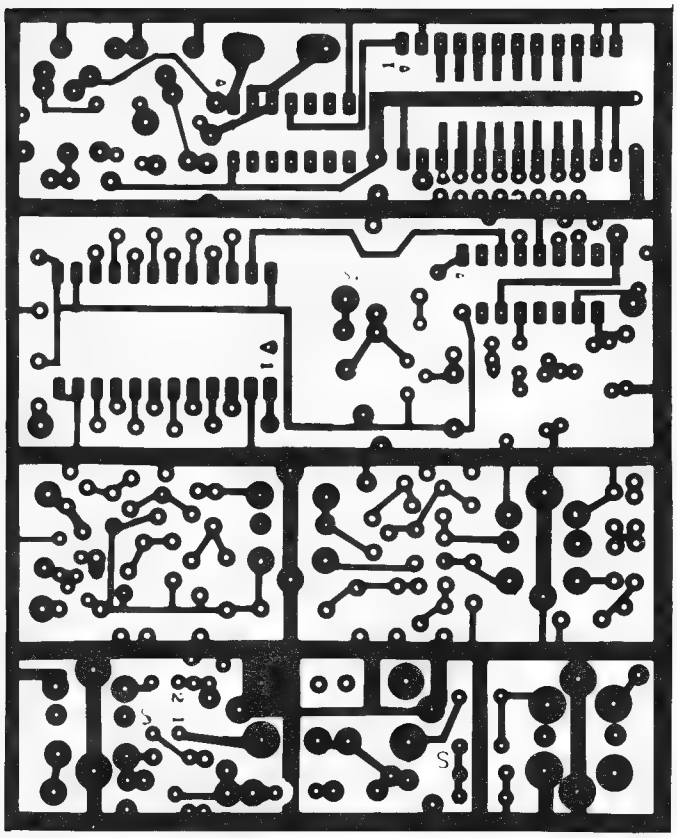


FIGURE 10: PCB 1 phase-locked loop, copper foil side.

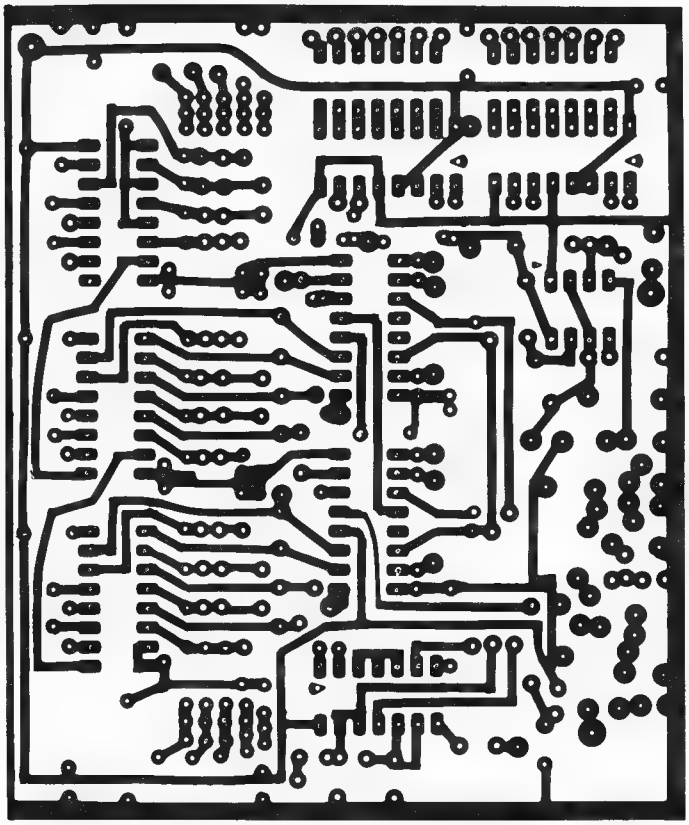


FIGURE 11: Automatic scanner, copper foil side.

may not VXO much so be careful and ensure the oscillator remains stable. Having set the frequency steps and offsets you can check the various other circuits such as the mic. amp. and the lock circuits. The collector of the mic. amp. should be between 4 and 6 volts. If not, vary the base bias resistors till it is. Do a final alignment of the frequency multipliers on transmit with a dummy load. Recheck the receive sensitivity and juggle the tuned circuits for best overall.

For those contemplating using the synthesizer in a new rig I would recommend the use of the building blocks circuit (AR October 1975). Purchase one set of crystals and get the receiver working first — then interface the synthesizer. On the air test showed the output to be clean. Don't be fooled when getting reports from people using 60 kHz wide receive filters — they will tell you they can hear you on 3 channels! When going between Tx and Rx, the reference frequency may be audible for a short instant. I suspect this is because the loop is underdamped.

All the components with the exception of the CD4059AE are easy to get. The CD4059AE is an RCA device and is handled by AWA. In Melbourne it can be ordered from Miles Street, Mulgrave. Cost is $10.00, including tax, for one offs. All-up cost is about $50. Use only the "SCL 4046" for the phase detector. Other makes which I tried had too much voltage drop across the emitter follower. I have built two units, one with a scanner and one with thumbwheel switches, and both are working satisfactorily. ■

MODE SWITCH S1 (See Fig. 5)

Pos. 1: Tx is shifted up by +600 kHz (Repts. 9-12).

Pos. 2: Simplex Mode.

Pos. 3: Tx is shifted down by 600 kHz (Repts. 1-8).

For all three positions, "06" is added to the automatic scanner to give correct Rx code.

For Tx +600 kHz, "32" is added to the scan counter output.

For Tx —600 kHz, "08" is added to the scan counter output.

For Tx Simplex, "20" is added to the scan counter output.

Scan counter output is "00" on Chn 40 and "40" on Chn 80.

For simplicity not all VCO frequencies shown.

$$\text{fvco on Tx} = \frac{\text{freq on 2m}}{36} \text{ MHz}$$

$$\text{fvco on Rx} = \frac{\text{freq on 2m} - 10.7}{36} \text{ Mhz}$$

■

QSP

22nd JAMBOREE ON THE AIR

An early reminder: The 22nd JOTA will be held over the weekend of 20th-21st October, 1979, from 0001 hrs. EAST on 20th October to 2359 EAST on 21st October.

Please note your calendars now.

Noel Lynch VK4ZNI, Nat. Organiser. ■

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UHF SSB TECHNIQUES

Terry McCarthy VK5GU
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Those interested in VHF/UHF will know of the record breaking contacts between Reg 5QR and Wally 6WG on the 23 and 13 cm bands and will realise the difficulties involved in generating a CW signal at these frequencies, let alone SSB. Most will also realise that while it is a relatively simple matter to varactor multiply a VHF CW or FM signal to any of the UHF bands any attempt to do this with a normal SSB transmitter results in a multiplied signal that little resembles single sideband and resembles it less the more it is multiplied. To find out the reason for this you might refer to the reference noted at the end of the article.

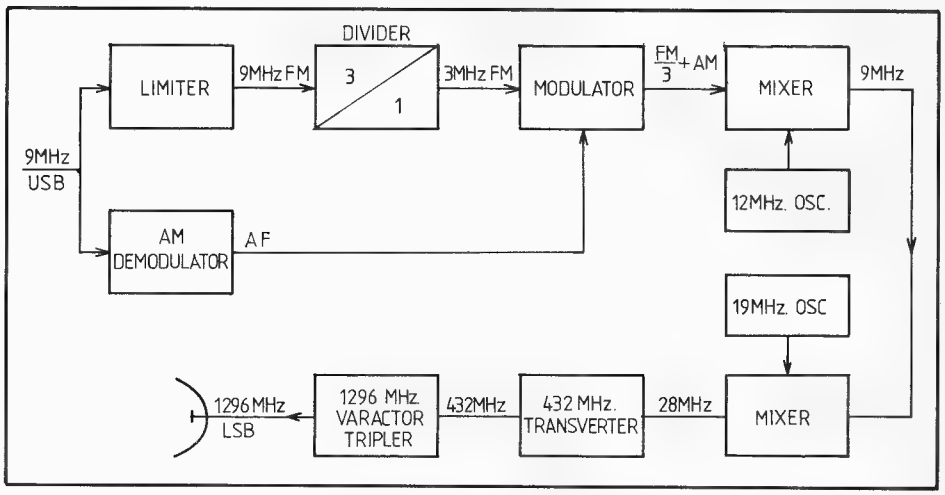

FIG. 1: The DJ4ZC method of generating VHF SSB as applied by VK5QR to 1296 MHz SSB.

In order to be able to multiply an SSB signal its FM and AM components must be separated, its FM component divided by the amount it is intended to multiply to the final frequency, and the two components then combined again. This can be done at low frequencies and the result mixed to a suitable frequency from where it can then be multiplied to the required UHF band. This method of UHF SSB generation was originated by K. Meinzer DJ4ZC and is the method used by VK5QR to generate SSB on both 1296 MHz and 2304 MHz. Figs. 1 and 2 show the methods used to achieve this. The first is essentially the scheme used by DJ4ZC in his original article. The second is the method used on 2304 MHz and has the advantage of using the more normal 28 MHz SSB source. Both of these schemes work quite well and I can testify to the fact that they are both indistinguishable from normal SSB signals on air.

Reg tells me that the secret of getting it working is the extensive filtering between mixing and multiplying stages. Since this isn't a constructional article I've left the filtering out of the diagrams in the interest of simplicity.

The third diagram (Fig. 3) is distinct from the first two in that it has never been built and is only one of many possible schemes for generating 3.5 or 10 GHz SSB. It shows that generating 10 GHz SSB is only a little more complex than generating 2.3 GHz SSB. Having generated 10 GHz SSB only one small problem remains (and this becomes apparent when you search the literature) a crystal locked 10 GHz converter. But this isn't an insurmountable problem.

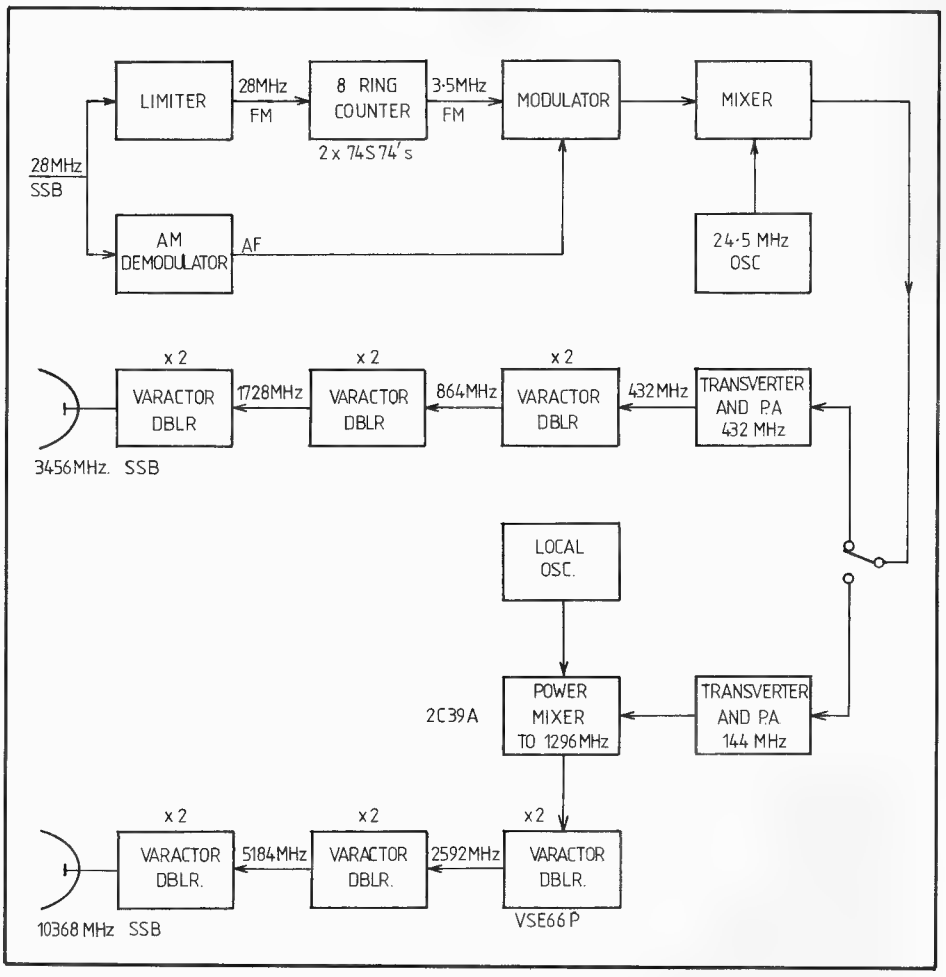

FIGURE 3: Proposed 3 GHz and 10 GHz SSB generator.

As you can see it's not impossible to generate SSB on 3 cm at levels of one or two watts. Considering that most work on 3 cm at the moment is wideband using milliwatts of power from free running GUNN DIODES, it can only be a matter of time before more records fall to this method of generating a microwave SSB signal.

Ref.: "A new method for frequency multiplication for VHF and UHF SSB", by K. Meinzer DJ4ZC, VHF Communications, Vol. 3, Edit. 3, Aug. 1971. ■

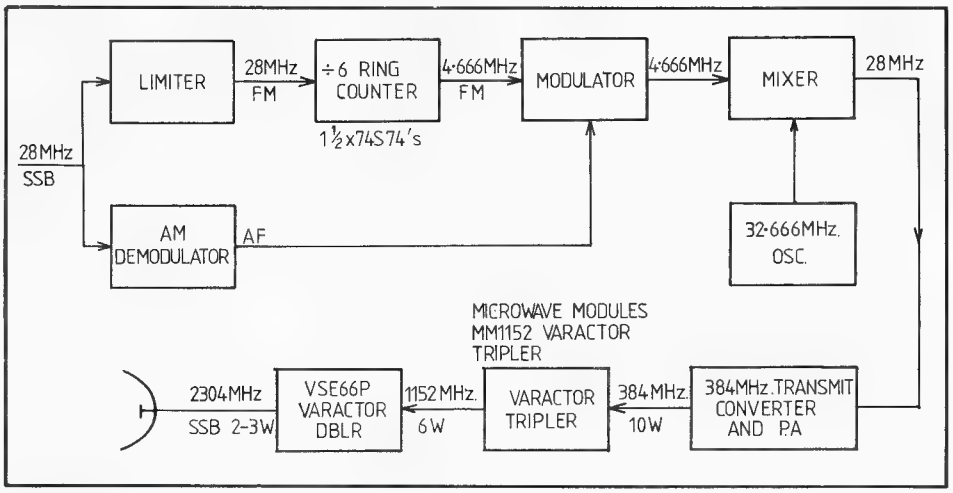

FIGURE 2 (Right): The DJ4ZC method of generating UHF SSB as applied by VK5QR to 2304 MHz SSB.

WEATHER RTTY

Alex Lutkewich VK6EZ

No doubt all of us at some time whilst tuning the band have come across a signal which to much annoyance turns out to be a weather transmission consisting of groups of 5 numbers and to cap it all, it's probably the strongest signal around. These broadcasts appear anywhere from 3 to 26 MHz and although they are of little use to us except for checking the machine at 50 bauds, they provide a vital service and their consequences affect our lives every day.

Every six hours meteorology stations throughout the Australian continent and neighbouring islands collect informtaion regarding temperature, atmospheric pressure, cloud cover, etc., and send this information to a regional office. This eventually ends up as a weather map of the continent. To send the information in the quickest way, it is sent in a code, i.e., to say that "It is fairly cloudy today but general conditions are calm" comes out as "7000".

This code when gathered and collated with the three hourly satellite pictures gives a complete weather picture to services that rely on the information, such as shipping, aviation, etc. Despite this, aircraft still manage to fly into "Cumulo Granities", or clouds with solid centres (like Mt. Kosciusko with cloud around it).

As we know it the weather consists of a number of forces such as temperature, pressure, wind speed, cloud and rainfall. These parameters can be broken down into more detail such as the type of cloud at various heights from ground to 50,000 feet or the temperature every 1,000 feet to 50,000 feet. To standardise all the variations of this information it is sent in a standard format. The first 5 characters are the station ID, second 5 are cloud cover expressed eights of cover, with 8 being completely obscured and 1 being clear. The third group is horizontal visibility, past and present weather, the fourth group being the ground pressure and temperature. The following groups indicate special phenomena and type of cloud at different altitudes, state of the sea, type of rainfall and the temperature of the ground. There are 8 groups in all and these groups are preceded by an indicator.

2 — lowest cloud and associated pressure change.

3 — state of the sea and direction of any swell.

4 and 6 — rainfall group indicators.

5 — temperature groups.

7 — ground temperature.

8 — coverage and types of cloud.

9 — special phenomena.

Confused??? You haven't seen anything yet. Let's take an example and try to decode it:—

96995 22304 98506 08030 753// 24/// 87608 22/// 3316/ 41992 529/

First comes the station ID, the 96 is the NW quadrant of Australia up to Indonesia and 995 is Christmas Island. The next group, 22304: 2 is 2/8ths cloud cover, 23 is direction of wind 230 degrees true, 04 is the speed in knots. 98506 decodes as: 98 visibility which is 20 km, 50 which is present weather and that is drizzle, and 6 which is past weather which was rain. 08030 is pressure in millibars (1008.0) and temperature at 30°C. 753// is 7/8 low cloud, type 5 cloud (low), height 3 (650-1,000 ft.) and the // is where the middle to high cloud would have been, but with 7/8 cloud cover it wasn't observed and a filler inserted. 24/// is the Dew point or the point at which the air cannot hold any more moisture, and the pressure tendency which was not measured and therefore ///. 87608: 8 is the significant cloud group, 7 is the coverage of the significant cloud group which is 5/8 cover, 6 is the type of cloud, in this case stratocumulus, and 8 is its height — 800 ft. 22///: 2 is the group indicator and the second 2 is the cloud direction (East) and the next three numbers would have been the corrected pressure tendency had this station been one that reports it. Correction is only required at stations well above sea level.

3316/: The first 3 is an indicator followed by a 3 indicating that the sea is slight, 1 being a low swell and the 6 showing the direction of the swell in 1/8ths of the compass, this being west. The / is the end of block. 41992: The 4 is the group indicator and the 1 indicates the elapsed time since the last measurement. The 992 is the amount of rain recorded, this being 0.2 mm. Finally 529//: the 5 is the group indicator for temperature, and the 29 is the maximum recorded since the last reading. The last two figures would have been the minimum, but as this reading was at 3 p.m. there has been no minimum since 9 a.m.

This completes one line of information which may seem confusing but a Met man can decode this in seconds, but it takes a little space to explain to the layman, and if you have understood this explanation then you are on your way to being a meteorological observer. As for me, I'm going to stay away from all such signals.

From AARTG, No. 12. ■

EARLY DAYS IN RADIO

L. P. McGuire VK6MG ex VK3KM ex VK3LX

Well do I recall some of the earlier days of Amateur Radio.

The old reliable UV, later UX201A which, with a filament rating of 5V at .25 amp., was used as a self-excited oscillator, using mostly the TPTG system of feedback.

Because of non-availability of resistors suitable for the purpose, it was a common practice to hold an automobile headlamp under water and break off the exhaust tip which was on top of the bulb. This would cause the bulb to fill with water and was used as a grid leak. It was rewarding to see the bubbles forming around the burnt out filament supports. Later when the technology advanced a second 201A was added to constitute the popular MOPA.

Types of modulation being to wire a small audio transformer in series with the grid return and so modulate the grid.

Another poor man's modulation was to wire a carbon mike in the earth lead of the radiating system.

With the average mains being 240V DC rechargeable cells called B Batts were available and were a series of glass tubes with lead plates and H_2SO_4 electrolyte.

Many was the Marmite jar saved by Mum or scrounged from the tip, and from the plumber strips of lead to fashion home brewed B Batts, which were charged from the DC mains via a lamp.

Eventually the 201A PA was replaced by the 21O, which gave somewhere around 10 watts, and if you aspired to the UX250 you were really in business. Soon the Quartz Crystal came along and made life easier.

It wasn't long before the shrewd amateur found that the lenses used in vintage spectacles were of quartz, and some opticians had them by the gross, and if you were lucky to find a source you could take them off their hands for a few quid a gross.

VHF was attracting some interest, and to get going on 5 metres or below (if lucky) the base would have to be removed from the glass envelope of the valve to bring the lead length to a minimum.

Underneath the operating bench would be a series of "slop jars" which could be used as rectifiers or, alternatively, as electrolytic condensers, depending on the application.

When valves were built with a suppressor grid, it wasn't long before it was used as a modulation grid, which also was very modest in its driving requirements.

With these various methods of modulation, the requirement was to avoid any change in oscillator frequency with modulation, in other words, FM. Of course both the crystal and the power amplifier helped in this respect. When crystal mikes came on the market, the D104 became popular with many amateurs.

Receivers were very simple, possibly what was termed 1V1, or one of RF, one detector and one audio. This was, with the use of phones, quite capable of dragging in good DX. The current RST report for CW used to be QRT and it was common to hear a report given as Q5 R9 T9X, the X denoting a signal of high order of stability, no chirp and rock steady.

A note with a percentage of ripple on it lent itself to good copy, indeed some have used, including yours truly, a Ford Model T trembler coil as a source of HT, with reduced primary voltage of course.

CW from such a rig was quite pleasant copy. Those were the days. ■

AMATEUR RADIO WEEKENDS

Sam Voron VK2BVS
YRS Magazine Publicity Co-ordinator
2 Griffith Ave., East Roseville 2069
Phone 407 1066, evenings 7 to 9 p.m.

The Wireless Institute of Australia Education Service incorporating the Youth Radio Service, NSW Division, has helped to co-ordinate several amateur radio weekends during October and November 1979.

Know someone who is just getting interested in Radio? At the weekend newcomers will be able to find out all about the hobby.

STUDYING FOR THE NOVICE OR FULL LICENCE?
Lectures and friendly people will help you at the weekend.

Want help in forming your own radio club at school or local area? You can learn about radio instructing and lots more at the weekend.

Want to meet other amateurs and try some way-out radio experiment in the bush?

Anyone for ten wavelengths on 80m? Yes you can try it at the weekend.

Newcomers, students for the novice, limited or full amateur licence and amateurs are all invited to get together, help each other and enjoy a great weekend.

Come to one of the weekends or all of them. Interstate travellers will find rail transport available.

All food and accommodation is provided.

All activities start at 8 p.m. Friday and conclude 3 p.m. Sunday, but you can arrive at any time.

FIRST WEEKEND IS AT WAGGA
Friday, 12th October, to Sunday, 14th October, 1979, at the NSW Sport and Recreation Centre on the Sturt Highway.

Send bookings to Education Officer, Wagga Amateur Radio Club, 110 Simkin Crescent, Wagga 2650, or telephone Bruce VK2VYZ on (069) 22 6746.

SECOND WEEKEND IS AT SPRINGWOOD
Friday, 2nd November, to Sunday, 4th November, 1979, at the Blue Gum Lodge Youth Centre, Springwood.

Send bookings to Amateur Radio Weekend, WIA Education Service, PO Box 52, Asquith 2078, or telephone Sel VK2NOK/YLS on (02) 827 3589, Ken VK2NWK on (02) 638 1687, or Les VK2NMY/YMY on (02) 477 3044.

THIRD WEEKEND IS AT PORT MACQUARIE
Friday, 9th November, to Sunday, 11th November, 1979, at the Wauchope Showground Hall.

Send bookings to Radio Weekend, Oxley Region Radio Club, PO Box 712, Port Macquarie 2444, or telephone Frank VK2NUG on (065) 83 1256.

Cost for each weekend is the same. Adults $22, wives (not attending lectures) $15, school students $15, children ten and under $8.

The cost covers all meals and accommodation, although sleeping bags or sheets and pillow cases are required. Beds are provided.

Get all your family and friends together and book early so you don't miss out.

Dick Smith has kindly donated over $60 worth of amateur products, including a short wave antenna kit, an Oscar satellite tracking kit, a multimeter, a two metre converter kit, and the Australian amateur radio handbook for a previous amateur weekend. The formation of regular Dick Smith amateur radio incentive awards is under discussion; a vote of appreciation was recently moved expressing thanks to Dick for his support of these weekends. ■

NEW ATLAS 110 LINE

• 250 WATTS • $499 • 80–10Mx •

At GFS, Australia's Atlas agents, we are proud to introduce a real breakthrough in HIGH POWER, LOW COST, amateur transceivers.

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*** * * * MORE OUTSTANDING FEATURES * * * ***

- **Frequency Coverage** 3.5-4.0 MHz, 7.0-7.5 MHz, 14.0-14.5 MHz, 21.0-21.5 MHz, 28.0-29.0 MHz
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- **Semibreak-In CW** is a standard feature
- **Built in** speaker and CW sidetone.
- **Modular Design** provides much easier service and maintainance. This is a piece of equipment that you can work on yourself if you wish, because you can get at everything with ease.
- **Choice of** 12-14V DC for mobile or 220-240 V AC for home operation with the Atlas PS-110 Power Supply
- **Superior Size** RX/TX-110 measures just 31W x 10H x 25D cms.

RX/TX-110 Transceiver $499
PS-110 Power Supply $109
MM-110 Mobile mount $58

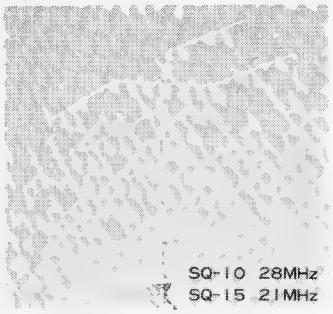
Now for only a fraction of the outlay previously necessary you can run up to 250 Watts on 80 thru 10 Metres, work CW or SSB, operate from the Car, or home QTH using the RX/TX-110H and its AC Power Supply, PS-110.

* * * * * * *

For color brochure with complete specifications write to us, phone us or just drop in and have a look at the RX/TX-110.

WHY SETTLE FOR A SECOND HAND TRANSCEIVER YOU CAN NOW BUY A BRAND NEW ATLAS

TET SWISS QUADS



This antenna is a **PHASED QUAD** *and well known as a HB9CV QUAD. Its concept is to drive the Radiator and Reflector at the same time with* **phase differences** *to obtain more gain and better front-to-back ratio than the conventional quads.*

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SQ-10 10m x Standard **12dB** Gain **$159**
SQ-15 15m x Standard **12dB** Gain **$169**
SQ-20M 20m x Loaded **10dB** Gain **POA**

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MODEL 103LBX Medium duty.
Rotation torque – 450 Kg/cm
Brake torque – 1500 Kg/cm **$164**

MODEL 502CXX Heavy duty.
Rotation torque 600 Kg/cm
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Rotation torque – 800 Kg/cm
Brake torque – 10,000 Kg/cm **$358**

1211 Mast Clamp for 103LBX **$19**
1213 Mast Clamp for 502CXX **$31**
1215 Mast Clamp for 1102MXX **$48**

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FINANCE AVAILABLE TO APPROVED PURCHASERS

Great Circle Map centred on Melbourne.

This new sought-after map, published by G.F.S. has just arrived. Centred on Melbourne it allows the user to take a bearing for directing an antenna to any place in the world. It also reads the shortest distance to that place. At 33.5cm x 43cm it is easily read and would be ideally suited to wall mounting or just mounting under a glass desk top.
Price: $1.00
allow 75 Cents for post and packing.

NEW PRODUCTS FROM MFJ

Now a very wide range of Antenna Tuners

MF-984 3KW Ant. coupler/Dual Meter type SWR/Power Meter/Co-Ax switch for Bal and Un Bal Line (Inc. Balun). **$419.00**
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MFJ-962 1.5KW Ant. coupler/SWR/Power Meter 6 Pos. Co-Ax SW for Bal and Un Bal Line (Inc. Balun). **$233.00**
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Wide Range of Semiconductor Spares available as used in YAESU, KENWOOD, STANDARD, etc.

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STANDARD C6500

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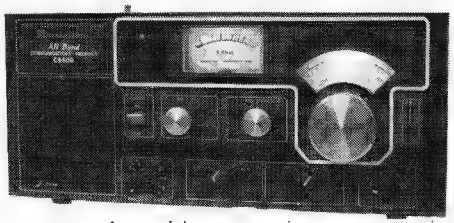

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A state of the art communication receiver covering the range 0.5-30MHz using a Wadley Loop for rock solid stability. Unlike some other receivers that use only one filter in the IF and exhibit poor selectivity The C-6500 has two filters, giving good selectivity on SSB and AM. For more details write to us for a brochure.

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- Over 32,000 Channels.
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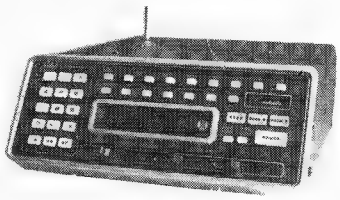
- Large Green readout, showing channel number, frequency, time, day and date.



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Because the **SX-100** covers such a wide frequency range, virtually any of the thousands of VHF/UHF **Commercial, Amateur** and **C.B. two-way services** in Australia can be monitored at the press of a button, e.g. **FIRE BRIGADE, POLICE, VHF MARINE OPERATIONS, CFA** and many, many more

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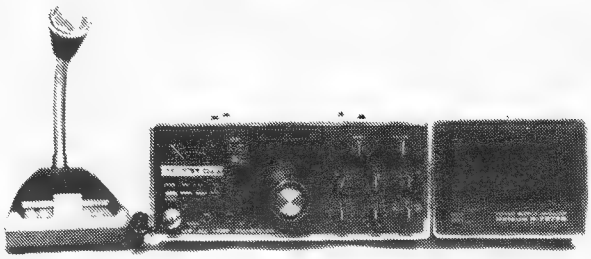

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7" length, 2" dia., 10 TPI **Price $4.36**
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FF-501DX Low Pass Filter, 3 Section, 1 kW	**$39.00**
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KW Electronics L.P. Filter, 5 Section,1 kW	**$59.90**
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TV-75 Drake High-pass filter 50MHz UP	**$12.00**
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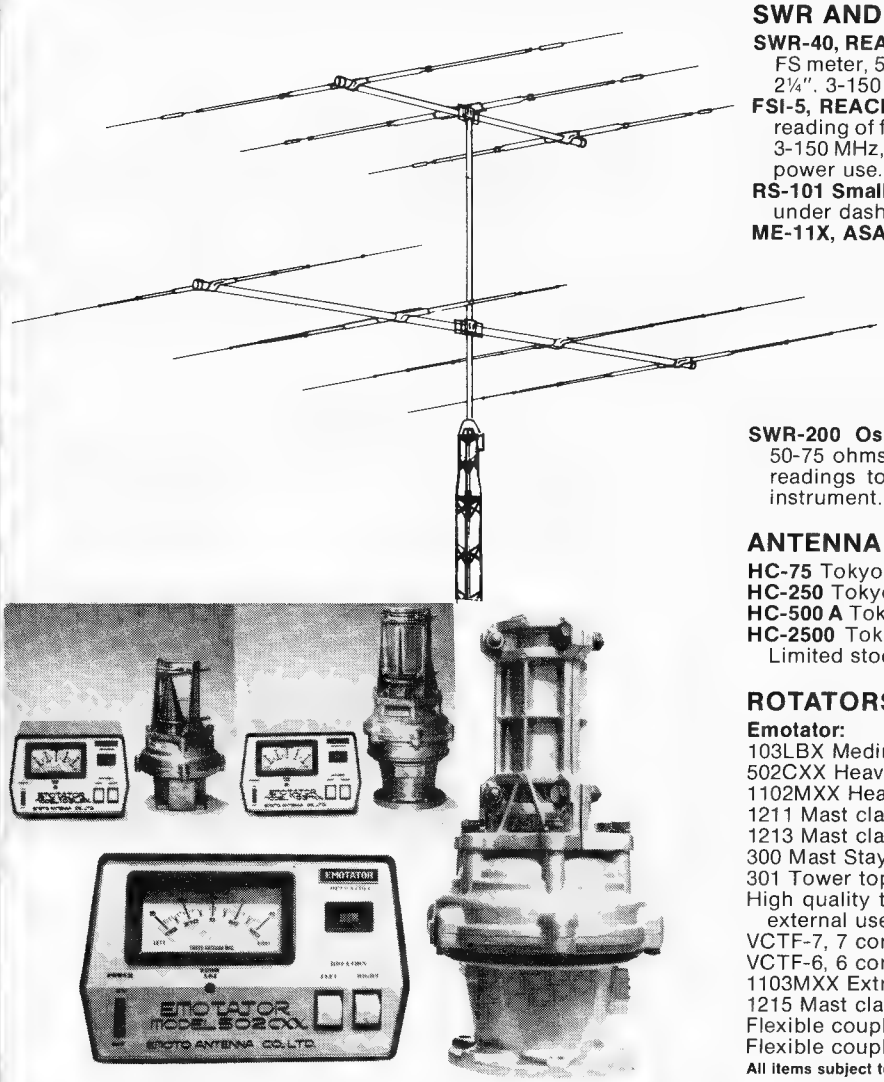
WIDE RANGE of Co-axial cable and connectors in stock.



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HC-75 Tokyo Hy-power labs. Trans-match 75w PEP	**$77.00**
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HC-500 A Tokyo Hy-power labs, inc. 160m x 500w PEP	**$159.00**
HC-2500 Tokyo Hy-power. Trans-match 2.5 kW PEP Limited stocks only at old price	**$256.00**

ROTATORS

Emotator:

103LBX Medium duty, disc brake	**$183.00**
502CXX Heavy duty, disc brake	**$259.00**
1102MXX Heavy duty, mechanical brake	**$389.00**
1211 Mast clamp for 103LBX	**$18.50**
1213 Mast clamp for 502CXX	**$30.00**
300 Mast Stay bearing	**$32.50**
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VCTF-6, 6 core (for 103 & 502)	**$1.25** per m
1103MXX Extra Heavy Duty, high turning torque	**$410.00**
1215 Mast clamp for 1102/3	**$50.00**
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Flexible coupler 450 (for 103)	**$16.00**

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HAM RADIO SPECIALISTS

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VS-LBM Ball Mount & H.D. Spring	**$25.00**
H.D. Spring	**$18.00**
AS-GM Guttermount	**$18.00**
VS-NGM Guttermount inc. M ring and Co-ax.	**$24.00**

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EKM-1A Audio Morse CP Osc with speaker, one transistor, and tone control, requires one UM3 cell, in metal case 3⅝" x 2½" x 1⅛"	**$16.90**
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* * * * * * * * * * * * * * * * * * * *

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FT-227R

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HAM RADIO SPECIALISTS

NOVICE NOTES

TUNING AND OPERATING THE TRANSCEIVER

If you have an older model transceiver and do not have tune-up instructions in the handbook this will help you.

(a) Adjust the preselect for the loudest signal in the band that is to be used. The preselect may also be known as the drive.

(b) Turn the mode switch to the tune position and advance the carrier control to the halfway position.

(c) Set the plate to the desired band segment, and position the load control to the approximate setting for the band. This can usually be determined by consulting the operator's manual. If the manual is unavailable, then a midway position will suffice.

(d) Turn the meter switch to IP or IC position.

(e) Switch the transceiver to the dummy load.

(f) Hold the mike button in and quickly adjust the PLATE for a dip (minimum reading on the meter).

(g) Turn the meter switch to RF or PO position.

(h) Hold the mike button in once more and adjust first the PLATE then the LOAD for a maximum reading on the meter.

The microphone must be held in for no longer than ten seconds at a time. The procedure should be repeated until the maximum output is obtained.

(i) Turn the meter switch to ALC position . . . hold the button down once again and adjust the DRIVE or PRESELECT for maximum output.
The transceiver is now pretuned.

(j) Turn the carrier control to full and repeat steps (b) and (h) once more to provide maximum output from the set.

(k) Switch to the aerial, check that the frequency is clear, and repeat (j).

(l) Turn the mode switch to USB (for 20, 15 and 10 metres) or LSB for 40 and 80 metres and turn the carrier control completely off.

(m) Turn up the mike gain and with the meter switched to the ALC position, speak into the microphone adjusting the gain until the needle deflects into the end of the ALC scale.

Note: Kenwood equipment has a tune position with reduced carrier and must be peaked in the CW position.

After a period of operation, possibly an hour or so, it may be noted that the ALC reading has become sluggish on transmit. If so the set should be retuned for peak output, or if the operator has shifted some distance down the band from the original tuning position, the set should be retuned at the new frequency.

Experienced operators generally retune every 25 kHz or so. An unresonant transceiver is very prone to cause TVI and considerable care should be taken over the tuning procedure.

If a dummy load is unavailable always, always, check that the frequency is clear before tuning up on the band.

SPEECH PROCESSING

There is a mistaken impression amongst many operators that processing increases signal strength.

The signal may appear to increase marginally, however the most noticeable effect to an operator on the other side of the world will be an increase in audio output.

Your signal will SOUND louder and have more punch. It will of course lose some of the natural tone, but this will be an advantage during pile ups and bad QRM, and may make the difference between being heard or not.

Caution must be taken to avoid too much processing as the result may be a signal that splatters a considerable distance up and down the band, thus causing annoyance to other operators, and distorting your signal to the station you are trying to work. Background noise (fans, etc.) can be amplified too much if a lot of processing is used. Readability will suffer.

Checks from local stations to ascertain the best settings are essential but on average a station a mile or two away should not hear you more than 5 kHz either side of your transmitting frequency.

NEUTRALISATION

If for any reason you change the final valves in your transceiver the set must be neutralised by a competent amateur, or by strict adherance to the instructions in the manual if you feel you can attempt the procedure yourself.

A set that has not been neutralised may be a very probable cause of TVI.

From CQDX Radio Group Handbook — by Trevor Reid VK3NNR. ■

★ ☆ ★

NOTE OF CAUTION

The advent of a large number of youthful licence holders has been something we must applaud: but it does bring a few hazards, particularly when the experience of the operator is rather limited. An accident which prompted this par occurred recently when a young AOCP holder went visiting aboard a yacht, which, in addition to some rather sophisticated gear, also boasted one of the old AM marine radios. Assuming the transmitter to be VFO controlled with the switches set "so", he proceeded to "tune-up" on 160, 80 and 40 metres and give a hearty old "CQ, CQ", complete with call sign, at each point. Unbeknown to him, the rig was constructed along lines which were popular in the past: tunable RX and crystal-locked Tx, which complied with regulations and ensured that the Tx frequency stayed where it was supposed to be (or close to it with FT243 xtals!) and changed by selecting the appropriate crystal with a switch. In this case, an Amateur call sign had a good airing on 2524 kHz, the Small Ships Channel — which caused a certain amount of consternation amongst the people who like "muckin' about in boats".

Fortunately, there were no repercussions that we know of, which rather highlights the worth of the old saying (translated) about fundamental orifice beating class any day. There is a lesson there for our less experienced operators, however, and it is this — NEVER EVER put a transmitter or transceiver to air until you are certain that the signal will come out on one of the bands you are licensed to use. When confronted with a strange piece of gear, first find out what it is supposed to do; and don't take anyone's word for it, particularly that of non-technical people. If in doubt, consulting someone with practical experience in servicing the equipment is the safest course to take: thinking you know isn't good enough, even though the temptation to give it a go is great indeed. Taking it a step further, this is also sound advice with any surplus or discarded equipment which may or may not still have crystals fitted: many services, particularly Marine or Aircraft where lives may be at stake, do not take kindly to strange call signs appearing out of the blue — and remember that your call sign, being unique, is relatively easy to trace. Play it safe — leave that tempting box switched off until you know a lot more about it.

From Smoke Signals, April '79 ■

QSP

HEALTH, SUNSPOTS AND SOLAR FLUX

There is a strange but strong correlation found between sunspot maxima and virulent flu epidemics writes Pat Hawker in TT Radio Communications May 1979. Other medical researchers appear to have found equally odd and inexplicable links between solar activity and health matters. For example, he quotes a report on an apparent link between the daily number of admissions to the cardiac thoracic wards of two hospitals in India and geomagnetic data in the form of daily sums of the planetary index of geomagnetic activity normally used as a measure of the effect of solar particle flux.

NEW PREFIX

According to Radio Communications March 1979 the ITU has provisionally allocated the call sign series HTA-H2Z to the Republic of Cyprus. ■

AROUND THE NOVICE SHACKS

NEVER TOO OLD

Bert Shire VK5NMS was licensed in early 1979 at the age of 74. Prior to that he was and still is an active SWL, being an official monitor for HCJB and Deutsche Welle. Later this year he will have completed 10 years continuous monitoring for Deutsche Welle and will be awarded an official service plaque.

Bert happened to read about a new class of amateur licence in the paper and decided to give it a go. After some disappointment with his application being mislaid and having to travel 200 miles each time to attend the exam, Bert was successful in passing all three, and was in due course allocated a call sign. Not a particularly noteworthy achievement in itself, but at 75 I think one worthy of some merit. It now provides him with a rewarding hobby (when he has time between his other activities) in his den on the seafront at Tumby Bay.

—From Greg Nixon VK5ZER/NGN.

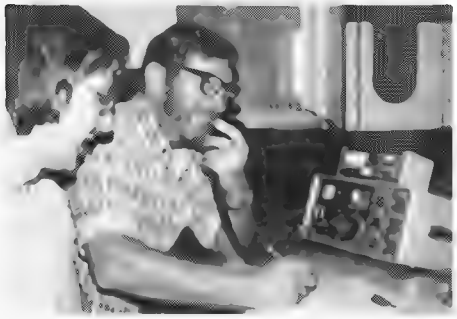
— Photo from Paul Shire Melbourne. ■

Who is this trying to hide behind his car? None other than Darryl VK3NEX. Darryl is renowned for his mobile contacts, especially on 10 metres and 80 metres with a commercial helically wound mobile whip.

At home, in the north of Melbourne, Darryl runs a TS520 and a parasol beam and has many DX contacts to his credit.

★ ☆ ★

Portable Amateur Radio as shown by Reg Blackshaw VK3ARB. Reg has had his licence for many years now and is always active in introducing newcomers to the art of Amateur Radio, particularly CW, as this is Reg's favourite mode. Reg has many friends world-wide through his sole CW contacts.



★ ☆ ★

Werner Wulf VK3NCW is one of the very active DXers on 15 metres. Werner is originally from Germany and has many awards for working German stations. Recently Werner has been producing home brew yagis for either 10 metres or combination 10 and 15 metres. With his TS520 and 3 element tri-band yagi on a home brew tower, Werner's signal is one of the best Novice signals on the band.

QSP

REALLY RADIO ACTIVE!

The March 1919 issue of the "Electrical Experimenter" featured some interesting advertisements. For only 50 cents you could buy a "generous piece of Carnotite, a Radium ore, "enough to conduct experiments, such as affecting photographic plates through opaque material". Also included, at no extra cost, was a glass phial containing an ore which was 35 per cent radio active Uranium. Hope they disposed of these items properly; perhaps they are still lying in someone's attic! ■

REPEATERS

Peter Mill VK3ZPP

FEDERAL NEWS

At the recent Federal Convention the band plan, which was published in June 1978 AR, was adopted. The only change being that the ATV liaison repeater frequency is on 147.9/147-3 MHz.

After many years of discussion the channel numbering system has been changed and is now based on frequency. With the increased use of synthesised transceivers this has become necessary. The repeater channels will now be identified by the output frequency.

EXAMPLE:

146.5	Ch 50 — 6500	Ch 2 — 6700
146.55	Ch 51 — 6550	Ch 5 — 6850

It is realised that in practice the repeaters will still be Ch. 1-8.

The 70 cm band plan was also modified to conform with this principle.

EXAMPLE:

439.000 MHz — 900
2m FM channels from 6000-8000
70 cm FM channels from 8001-9999

STATE NEWS —

A.C.T.

The Mt. Ginini repeater (Ch. 6950) is operational again. Since it first went back on the air, the aerial has been changed to a nine element coaxial collinear. Its performance appears to be as good or better than the aerial used on the original repeater. The installation is housed in the VK1 Division's new building on Mt. Ginini.

VICTORIA

The Mt. Macedon repeater (Ch. 6850) is back on the air. It is using a 3 dB aerial on the top of the tower for the transmitter and a 6 dB on the receiver. The receiver aerial is upside down and on the west side of the tower, which shields it from the Hume Highway area. The transmit power is 8 watts to the aerial. When the duplexer is finished the 6 dB aerial will be installed on top of the tower.

The new Melbourne 70 cm repeater is expected on air soon. Its call sign is VK3ROU and is located on Mt. Dandenong. Operating frequency is 433.225/438.225 MHz (Ch. 8225).

The Bendigo repeater (Ch. 6800) has recently changed its call sign from VK3RAM to VK3RCV. Since the aerial on top of the TV tower was hit by lightning the repeater's range has been reduced due to a temporary aerial being placed lower down the tower.

Any information for AR or the Federal Repeater Sub-Committee should be sent c/- the Federal Office in Toorak.

Peter VK3ZPP. ■

BAND PLAN FOR 2m FM — 146-148 MHz

146-147 MHz Primary Voice Communication Channels

Sub-band		Recommended use for specific channels
Repeater inputs Repeater outputs (16 channels)	146.025-146.400 146.625-147.000	50 kHz channels to be preferred where available
Simplex (8 channels)	146.425-146.600	146.500 calling channel (national)
		146.450)) primary 146.550)
		146.600 RTTY (national)*

*RTTY channel is an exception to the recommended rule of allocating special purpose nets above 147 MHz as it is a well established and populated channel.

147-148 MHz Local or Special Purpose (voice or data)

Sub-band		Recommended use for specific channels
Repeater inputs Repeater outputs (15 channels)	147.625-147.975 147.025-147.375	147.300/147.900 ATV liaison (national) 147.325/147.925)) RTTY (national)
Simplex (9 channels)	147.400-147.600	147.400)) ATV liaison 147.425)
		147.450 ATV/SSTV/FAX
		147.475 SSTV-FAX liaison
		147.550 Micro net
		147.575)) Data Net 147.600)
		147.5)) Not allocated 147.525)

COMMERCIAL KINKS

Ron Fisher VK3OM
3Fairview Avenue, Glen Waverley, Vic.

AUTOMATIC REPEATER OFF-SET SWITCHING FOR THE IC-22S

John Miller VK3BFM has come up with this nifty idea to save confusion with the off-set switching on the 22S.

Over to John to tell the story.

Have you ever forgotten to flick the switch on your IC22S when QSYing to, or checking the freedom of, simplex channels? If your memory whlist driving (or at home) is anything like mine the answer could well be YES! This little circuit was designed to overcome this operator malfunction, whilst still enabling the IC22S to be used normally for listening on input frequencies, or working reverse on locally unused repeater channels.

Only one wiring change is necessary to utilise this circuit. The wire from the wiper of the duplex switch to the programming matrix board is removed and re-routed to one of the inputs, whilst the output of the unit is connected to the duplex position on the board.

The second input is derived from the switched 9V available at the edge of the matrix board using diodes, as supplied for programming the rig, so that you do not fire up on two channels at once, or rather some peculiar frequency. When both inputs to gate 1 are high (repeater channel selected and +9V receive) the output will

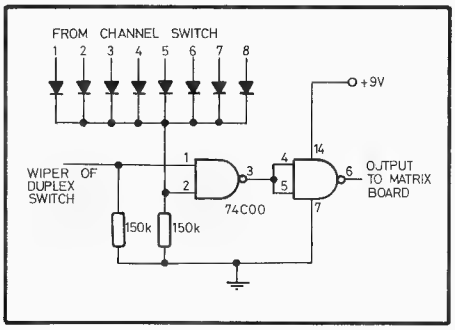


FIGURE 1.

be low. This is then inverted by gate 2 to provide a high output to the duplex circuitry. On transmitting, the +9V from the duplex switch will disappear causing a high level on the output, once again inverted by gate 2 to return the set to its programmed frequency. On duplex B the +9V appears on transmit to shift the frequency up 600 kHz.

Should you desire to listen on the input, to find out if you are within simplex range, just move the duplex switch in the normal fashion.

A CMOS IC was chosen partly because it was available but mainly because it could provide the required 9V level with no interface circuitry. So there you have it, a simple way to add automatic duplex switching to the IC22S. ■

THE WESTLAKES RADIO CLUB

Photos and details by Les Daniels VK2AXZ.

Ken Hargreaves VK2AKH, State Supervisor YRS, co-author of "1000 Questions for Novice Candidates" and several other YRS publications.

Jamie Campbell VK2YGJ, the builder of the Channel 10 repeater on Watigan Mountain. The repeater is solar powered and popular in both Sydney and Newcastle.

Keith Howard VK2ARX. Keith has been putting people through the AOCP for many years now. He is the author of the well known "Questions and Answers for the Novice Licence" and is the Director of the Westlakes Radio Club.

Harry Gray VK2AFA, aged 83 and first licensed in 1926 and still active on HF.

Lew VK2BPR giving a lecture at Westlakes Radio Club on one of his two dozen antique radios.

Ces Butterworth VK2BU, first licensed 1929, and now usually on .40m during lunch times. With Sir Allan Fairhall VK2KB, helped put broadcast station 2KO on the air.

Join the I.W. net at 2300Z on Thursdays on 14165 kHz when you have intruder information.

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Following the highly successful and enthusiastically attended 1978 Symposium held in May last year, the organisers are planning another event to stimulate and enthuse. The theme for this year's Symposium will be "Propagation and Circuit Techniques".

The series of lectures and workshops planned will cover the following topics: The coming solar cycle peak; Propagation research in Australia; Long distance VHF work; Practical SSB equipment; Circuit design and analysis using a computer; Amateur microwaves; Amateur applications of microprocessors; Building and using test equipment. A trade display is also planned.

For a registration fee of only $20 you can enjoy two and a half days of stimulating lectures and discussions from well-known amateurs – lunches and coffee breaks included! Those attending will receive a bound copy of the Symposium 'Proceedings'.

For further information, registration forms etc; contact: **THE FACT SYMPOSIUM ORGANISER**
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Pass Band Ripple	⩽ 2 dB					⩽ 1 dB
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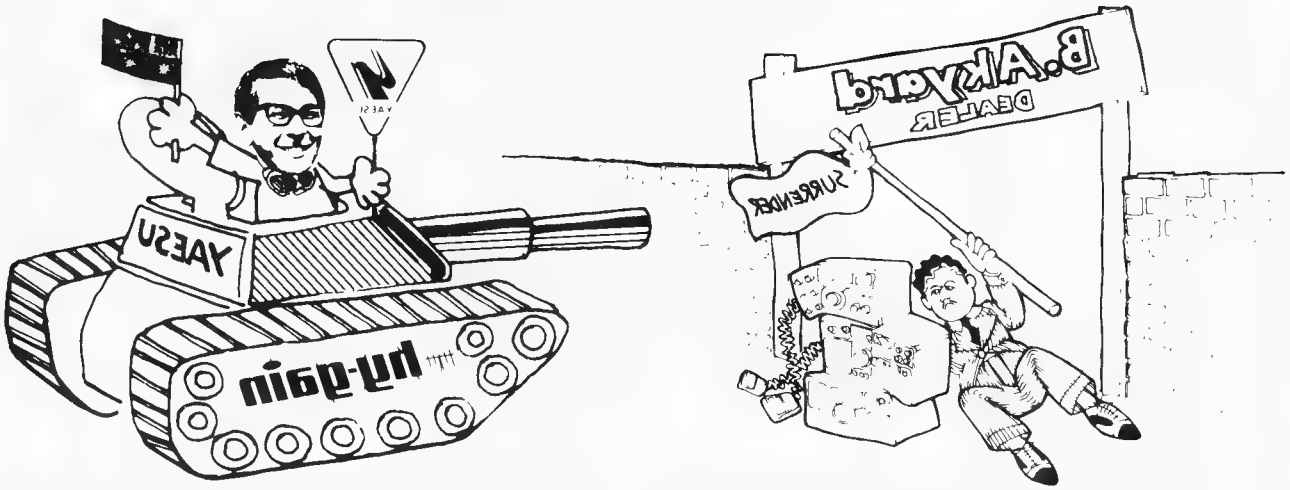

Reinforcements are on the way!! Yes, to help in the war we have sent for reinforcements. The long awaited FT-625R (6m all mode transceiver) should hit the beaches mid August.

After the loss of the FT-7, the more powerful FT-7B has joined the war to fill the gap for a good mobile transceiver (available mid August).

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FT-301 Solid State HF transceiver	Cat D-2870	**$795.00**	FT-901D Top class HF transceiver	Cat D-2854	**$1229.00**
FT-7B Mobile HF transceiver	Cat. D-2868	**$625.00**	FT-227RB 2m FM scanning transc.	Cat D-2891	**$379.00**
FT-227 2m FM transc with memory	Cat D-2890	**$319.00**	CPU-2500 computerised 2m transc.	Cat D-2889	**$549.00**
FC-301 Antenna tuning unit	Cat D-2896	**$219.00**	FC-901 antenna tuning unit	Cat. D-2855	**$249.00**
FL-2100B 1.2kW linear amplifier	Cat D-2546	**$529.00**	FL-110 200W linear amplifier	Cat D-2884	**$189.00**
FRG-7 Solid State HF Rcvr	Cat D-2850	**$319.00**	FRG-7000 Digital HF rcvr	Cat D-2848	**$599.00**
FT-625R 6m all mode transceiver	Cat. D-2886	**$795.00**	YC-500S 500MHz Freq. Counter	Cat D-2892	**$475.00**

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AB 3-20 • 3 el. 20 M.	$129.--
AB 4-20 • 4 el. 20 M.	$189.--

ROTARY DIPOLE.

Dipole 20-15-10 M. $ POA.

HIDAKA.

HIDAKA

VS-33. 3el.Triband Beam 20-15-10M.Inc.Balun. .$259.
VS-41-80KR. 80-10M Trapped Vertical. .....$119.
VS-RG. Radial Kit for VS-41-KR.....$35.

HY-GAIN hy-gain

18-AVT 80-10 M Vertical .....$129.
TH-3 Mk.3 20-15-10 M Beam .....$255.
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TH-6 DXX 20-15-10 M 6 EL.....
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Few only.

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2 Position COAX Slide Switches

2 80-10M. Traps for dipole. **$50.-**
Complete with balun and insulator.

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LP-42. Drake Low Pass Filter.200W. .....$19.
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M330. Diawa Mic. compressor.....$94.
5D-fb. Foam filled coax double shielded 2.02 dB loss per 100 feet.....$1.20 per metre.
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PL-259.....65 c.
PL-259 to suit 5D-FB. $1.50
FF-501DX. Low Pass Filter.....$40.
Bumper Mounts 3-8x 24 Thread. .....$10.
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MC-440. RF Speech Processor.....$135
Porcelain Egg Insulators.....50c.
CN-620 DAIWA SWR Meter.....$95.
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HI-Q Balun 1:1.....$15.95

NEW!!

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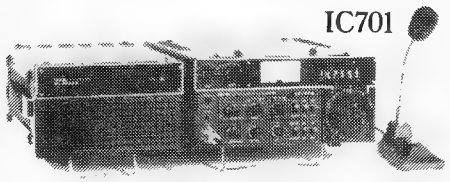
MOBILE ANTENNA

6 feet long with 3/8 24 tpi. thread

80M Helical.....$22
40M Helical.....$21
20M Helical.....$20
15M Helical.....$20
10M Helical.....$20.

Bumper Mounts 3-8x 24 Thread. .....$10.



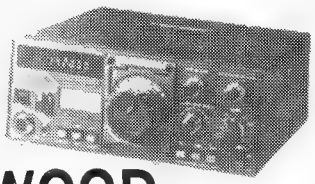
The fabulous state of the art ICOM IC701 solid state transceiver.

ICOM $1299

IC-701. HF 160-10M Transceiver. .....$1299.
IC-202E. SSB Portable Transceiver.....$229.
IC-22S. FM 10 Watts 2M Mobile Transceiver. $295
IC-211. ALL Mode 2M.Transceiver. .....$799.
IC-280. Mobile 2M.Digital Transceiver. .....$449.
IC-701PS.Power Supply.....$250.

NEW !

TS-120



KENWOOD

TS-520S 160 10 M. Transceiver AC .....$POA
VFO-520S Ext. VFO for 520 .....$163
DS-1A DC-DC for TS-520 .....$79
TS-180 160 10 M. Transceiver .....$1300.
VFO-820 Ext.VFO for 820 .....$195
TS-120S 80-10 M. Transceiver.....$POA
VFO-120V Ext.VFO for 120.....$148
PS-120 Power supply for 120 .....$110
SP-120 Ext speaker TS-120 .....$40
TL-922 Linear Amp. $1399
SM-220 Station monitor scope .....$379.
BS-5 Panoramic adaptor for 520S.....$66
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AT-200 SWR meter,antenna coupler $185
RD-300 Dummy load 150 mHz-300W.....$79
TR-7625 2 M.-25 W. Digital $465
MC-10 Hand mic.....$21
MC-35S Hand mic. noise cancel.....$26
MC-50 Desk mic.....$59
YG-3395C CW filter for 520.....$59
YG-88C CW filter for 820 .....$59
YK-88C CW filter for TS-120 .....$38

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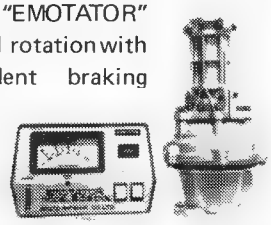

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502CXX. Heavy Duty. .....$243.
1102MXX.Extra Heavy Duty. .....$369.
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VCTF-7. 7 Core Cable.per Metre. $1.20
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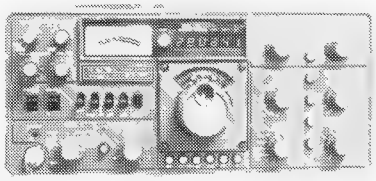
DR-7500S. Medium Duty. .....$189.
DR-7600D. Heavy Duty.....$289.

YAESU Mobile Antennas.

RSL base mast inc. 2 M.....$29
80 M.Resonator.....$22
40 M.Resonator.....$21
20 M.Resonator.....$20
15 M.Resonator.....$20
10 M.Resonator.....$20

YAESU



FT-101Z 160-10 M Adj. N/B IF $765
OPTIONAL.
FAN.....$39
DC-DC for 101Z $79
FT-901DM Transceiver.....$1549
FV-901 Ext.VFO FT-901,FT-101Z.....$439
FC-901 Antenna coupler $249
YO-901 Panoramic adapter, monitor scope $499
TV-901 6M,2M,70 cm All inc. $839
SP-901 Ext.speaker for 901-101Z.....$53
YR-901. Morse readout Adaptor $TBA.
FRG-7 Communication receiver $339
FRG-7000 Communication receiver .....$595.
LF-2A Narrow band filter FRG-7.....$20
FT-7B 80-10 M.Transceiver 100W.....$619
YC-7B Digital display for FT-7B $123
YE-7A Hand Mic for FT-101Z $21
YD-148 Desk Mic for all Yaesu $49
YP-150 150 Watt dummy load and Watt meter $112
FL-110 Solid state amp. 160-10 M.....$239
FL-2100B 1200 W. Amp. $585
QTR-24 24 hour world clock $33
YC-500 Freq. counter .....$POA
FT-227R 2M. Digital transceiver $329
FT-227RA 2M. Scanning digital transceiver.....$399
FF-50DX Low pass filter 2 kW. $40

Optional X-tall filters FT-901,FT-101Z $59

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AMATEUR SATELLITES

Bob Arnold VK3ZBB

OSCAR 7

OSCAR 7 keeps appearing in working order although there are occasions when the beacons are not operating and it is necessary to call through the satellite to ascertain whether it is working. At the present time OSCAR 7 is flying in long periods of sunshine and therefore the batteries, which I have previously mentioned as defective, are receiving a reasonable charge. Some time in September the satellite will pass into quiet long periods of darkness and therefore the battery recharging facilities may not be available and at this time we may find that communication through the satellite is not possible.

OSCAR 8

OSCAR 8 continues to work satisfactorily and many contacts are heard on both Mode A and Mode J.

PREDICTIONS

As will be noted this month's edition does not include the predictions for September, i.e. the month after publication. The reason for this is that the orbital parameters of OSCAR 8 in particular are changing slightly and it is not possible to determine accurate reference orbits three months ahead. Although it may cause some inconvenience I propose for the time being to revert to publishing the orbital data for the month in which the journal is published. This will mean that if there is any delay in receipt of the journal, interested operators will have to do their own calculations for a few days at the beginning of each month; this should not prove difficult as the movement in each day's time is constant enough for reasonably accurate predictions.

It would appear that the predictions given for August in last month's copy of "Amateur Radio" are between four and five minutes late; therefore, to obtain the correct time add, say, five minutes to those predictions. As mentioned, I am not too sure what is happening and this correction time may be even a little longer when we reach the month of August.

AMSAT NEWSLETTER

The saga of the missing copies of the September and December issues of AMSAT Newsletter continues and the mystery deepens. A letter from Perry Klein, President of AMSAT, quite positively states that the Newsletters were sent in bulk to Australia for redistribution to Dave Hull VK3ZDH who, for many years, has been responsible for the re-direction of bulk posted mail and assures me they were not received by him. I am quite confident that this would be so as I have spoken with Dave on a number of occasions and we have both expressed concern at the non-delivery of these letters. One can only presume that the parcels went astray in the post.

I will continue to pursue the matter and hope that eventually the subscribers will receive the missing editions.

As from the March 1979 edition the Newsletters are being posted direct from the USA by air mail to Life Members and sea mail to Annual Members, unless an additional $3 has been forwarded for the extra cost. All VK AMSAT Members should have received the March edition by now; if not I suggest you write direct to AMSAT.

BRITAIN'S FIRST AMATEUR SPACECRAFT

I am indebted to M. N. Sweeting G3YJO and "Radio Communication", the journal of the RSGB, for the following information on a proposal for a British amateur spacecraft. This satellite, known as UOSAT, is a joint venture of the University of Surrey and AMSAT, backed by British industry, and it is hoped that the spacecraft will be available for launch into polar earth orbit in 1981-82. The proposed spacecraft will be a departure from the traditional OSCAR satellites which have been oriented predominantly towards providing improved long distance communications for amateur operators. UOSAT will complement the OSCAR series as an experimental and scientific amateur spacecraft.

In the past, frequencies used in amateur satellites have been in the VHF and UHF areas of the spectrum and it is proposed that UOSAT will be used to explore satellite communication at other frequencies.

The proposed experimental modules aboard the satellite will include:—

Ionospheric studies experiment:

Phase referenced HF beacons on 7, 14, 21 and 28 MHz.
Magnetometer.
Radiation counters.

Education experiment:

Earth-pointing slow-scan TV camera.
Synthesized voice telemetry system.

Future systems experiments:

SHF beacons on 1.296 and 10.47 GHz.
Expanded CODESTORE system.
Microprocessor housekeeping system.
Two-axis stabilization system.

The spacecraft will be constructed in modular form commencing with the service modules and then progressing through the simpler experiments, i.e. the HF beacons, to the more complex items until resources and/or time run out. The resources necessary for this project are of considerable magnitude and may be of interest. A sum of $160,000 has been raised to support personnel, components and travel, the major components including 4000 solar cells, batteries, magnetometer and antenna deployment mechanisms have been located, sophisticated test facilities have been arranged and construction facilities have been provided by the University of Surrey. It is proposed that there will be a Project Manager with a full-time assistant, together with a group of at least ten amateur and non-amateur staff who will contribute on a part-time basis.

It is hoped that much of the spacecraft will be built at the University and it is anticipated that interested groups of amateurs will contribute specific experiment modules.

It will be seen from the above notes that the experiments proposed from UOSAT will be of considerable interest to specialised groups of amateurs in Australia, including amateur TV operators. Early notice of this experiment will also give local amateurs an opportunity to develop their 1.3 and 10.5 GHz equipment so that it will be available in time to listen to UOSAT during its early orbits. This is new ground for many amateurs who, to date, mainly confine their activities to discussion and it should be a means of promoting SHF experimentation in this country. ■

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

I recently bought two wind your own balun kits from a well known electronics supply house.

As I studied the printed design leaflet supplied with the kit it seemed to me the information portrayed could have been presented in a simpler form and contained an error in Figure 10.

As the information in the leaflet came originally from the ARRL Electronics Data Book, I found this hard to believe but practical application of my ideas proved me right.

In the interests of others who may be led astray by the wrong circuit shown, I supply the following reasoning and corrections.

Firstly the wrong circuit as printed in the leaflet.

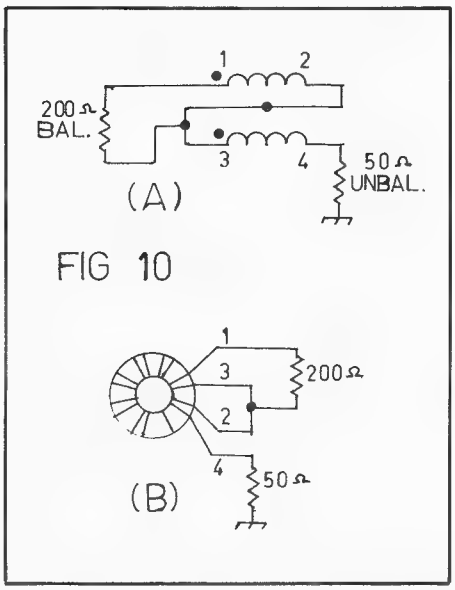


FIGURE 10: Original.

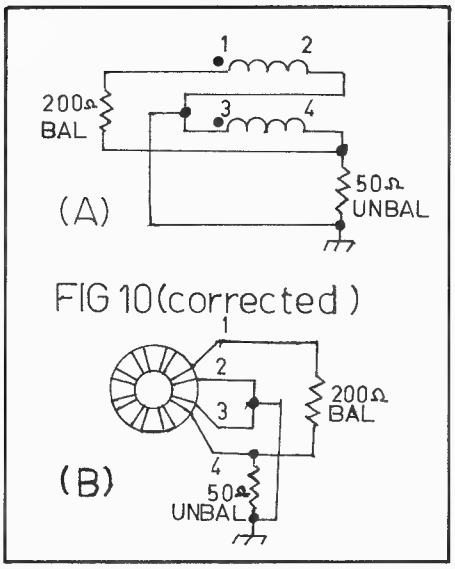


FIGURE 10: Corrected.

Looking at Fig. 10, firstly there is no complete circuit for the low Z side as an additional wire or earth point is needed.

Secondly a balanced winding needs a centre tap which would normally be earthed, and this is not so in the diagram.

Thirdly as a 4 : 1 impedance ratio is needed a 2 : 1 turns ratio is necessary but not achieved in the circuit shown.

To correct both the top and bottom diagrams the following changes need to be made.

The wire connecting 2 and 3 should be earthed. The lower end of the 200 ohm resistor should be connected to 4 and not to 2-3 as shown.

Bruce Hannaford VK5XI ■

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,
Dear Sir,

I wish to comment upon and draw attention to, the statements by the WIA Federal Awards Manager relating to the "Worked All VK Call Areas (VHF) Award" in May 1979 AR.

To start with, the fact that the majority of the awards issued have gone to stations in VK2 and VK3 is only to be expected. A check with the number of licences alone would suggest that out of 12 certificates issued the majority would come from these two areas.

As for operators not being interested in the award, how could they possibly be expected to be? Since 1973 ALL the WIA Awards have received virtually no real publicity at all. If you fail to tell people that these awards are available you can hardly expect to have them clamouring for them.

The comments about no VK9 activity are totally incorrect as any active 6m operator will confirm. If this isn't so, how come that the VK9 call area has been worked by stations in Japan and the USA? VK9ZR alone worked over 500 stations on 6m during the Mellish Reef operation.

True, there may not CURRENTLY be any VK0 activity on 6m but does this mean that you delete an award because ONE year no one takes 6m equipment to VK0?

Such a suggestion is obviously ridiculous. There is every reason to be optimistic that there will be future operation on 6m and VK0. It should be borne in mind, too, that the many VK0 QSOs from Macquarie Island were during a sunspot minima period, not the type of conditions we are experiencing now. The mere fact that an award of this type is offered in itself provides incentive for 6m operation from VK0 where little if any incentive existed before. Surely that alone is a very important reason for maintaining the award.

Currently there are only THREE awards available to VHF operators from the WIA. These are the Worked All States, VHFCC and WAVKCA (VHF) awards. With so few incentives for VHF operating I would have thought it more desirable to increase rather than decrease the number. If the number of awards issued is to be the criteria for keeping them it would seem logical to examine the number of certificates issued for the other two awards and consider deleting them, too. What rubbish! I would ask how many operators licensed since 1973 are aware of our VHF awards? VERY few I would guarantee. This cannot be blamed on VHF operators.

To say that VHF operators "will never now be able to qualify for this award because of their locations and the lack of opportunity to work VK0 and VK9" is utter nonsense. Has Bill Verrall read or heard of what is taking place on 6m? After making that statement I can only conclude that he can't possibly know what is happening. In recent correspondence he told me that he wasn't active any more on 6m and not likely to be active again, therefore can he claim to be making informed statements about 6m operation and what is possible? I can't really see how he can.

One reason that few awards have been issued is that the first eight people to qualify for the certificate didn't receive their certificates until almost FIVE YEARS later. As an exercise in how to win friends and influence people the WIA must have set some sort of record in this matter. To add insult to injury, the quality of the award compared with overseas equivalents is quite pathetic.

It is almost impossible to write rules for an award that will give "an even chance" to every applicant. Invariably someone will be at a disadvantage somewhere no matter how hard you try to do your best in giving everyone the same chance. However in the long run these problems are almost always surmountable and those who really try make the grade. There is little point in having an award that is too easy, as obtaining such an award really proves nothing and requires no skill, effort or determination. Any award of value should prove that the recipient has done something worthy of the distinction it gives. It should be noted that seven out of the 12 operators who have so far received the award have obtained it while operating in Ch. 0 service areas with something like 20 hours per day of TV transmission (usually 6 a.m. to 2 a.m. the following day operating hours). Any operator who hasn't tried to work 6m under these conditions can't imagine the problems that this involves. To obtain the award under these limitations is a worthy achievement above and beyond the basic award requirements.

I have always been of the opinion (and as an ex WIA Federal Awards Manager myself) that the position of the Awards Manager is to administer the decisions of the Federal Executive and not to institute personal whims alone. Except for changes to DXCC listings all changes to awards, even of the most minor nature, had to be submitted to and approved by the Federal Convention of the WIA during my term of office. Has this position now changed? As the current Awards Manager has held the position for a very brief time I question whether he should start chopping out awards on his own say so. After all, it is the interest of the membership he represents, not his own. If the VHF Awards are too great a burden I would willingly take on the job of issuing them if the interest of members is to be served.

Certainly, at the moment, it may not be possible to achieve the award in question until there is further operation, particularly from VK0, but this is no reason to abandon the award. 2m WAS is even harder but many people are waiting for their one VK6 or VK8, no one has ever suggested deleting this award because it is too hard — it is the difficulty that provides the incentive to try and reach the particular goal. The very fact that VK9 and VK0 are requirements for the WAVKCA (VHF) Award is incentive for the operators going to or living in those areas to use 6m. There is absolutely NO reason why a VK5 or VK6 operator couldn't get the award given activity. Not very long ago many operators thought working all JA districts (1-0) was too hard from southern VK. Not only has that been achieved but some have 40 or more of the JA Prefectures worked as well as countries such as HL, KG6, KH6, KL7, W, XE, etc. In this light it can't possibly be claimed that an award such as the WAVKCA (VHF) Award is too hard. Any reasonable dedicated operator, given time, should be able to qualify. Please don't discourage attempts to try harder or work further because uninformed people think it can't be done; it can and will be done given incentive to do so.

Geoff Wilson VK3AMK. ■

The Editor,
Dear Sir,

May I make a plea for the correct use of phonetics in call signs and general conversation. I have found it very confusing to hear the names of countries used instead of the well recognised phonetic alphabet. I may be a voice in the wilderness, but correct operation must be easier.

Now, another matter stemming from some comments in WIANEWS June 1979, page 6, about the recent convention. Quote: "A position on 10 metre band beacons was adopted with a reminder to novices to leave the beacon frequencies clear as far as possible (28.2-28.3 MHz segment)" unquote.

As the novice does not have sole occupancy of this section of the band, I wonder why we were singled out in this manner. Perhaps some information on these "beacons" may help us to understand your comment.

Yours faithfully,

Peter Lord VK3NPL
Victor Kilo 3 November Papa Lima
NOT
Venezuela Kenya 3 Nicaragua Pakistan Luxembourg. ■

The Editor,
Dear Sir,

The small number of operators on UHF FM seems to be due to several factors. The first seems to be the general unavailability of rigs (commercial/disposal) and the second a syndrome about anything higher than 144 MHz. How many times have we heard "Oh it's too hard for me" from avid home brewers, fiddlers and conversion types. If you have mastered 2 metres FM then go forward, young man. The Icom IC30 is now available and Newcomers to 70 cm FM will find operators willing to help them to be active on repeater VK3RAD.

Don Sinclair VK3VH. ■

QSP

6m DX RECORD

According to Ham Radio May 1979 a new 6m DX record of 12,059 miles was set early in March when LU8AHW worked HL9TG. This was apparently the same evening when VK4s worked WA4TNV/KL7.

CW IN SPACE

Among the items on the recordings "The Sounds of Earth" on a gold-plated copper album strapped to the bodies of Voyagers I and II (Jupiter, Saturn and beyond) is the latin phrase "ad astra per aspera" (to the stars with difficulties) in CW. This was taped by WB2FWS. The second Voyager is due to arrive at Jupiter on 9th July and from 6th to 15th July the Jet Propulsion Laboratory Am. Radio Club will contact the spacecraft through its station W6VIO and will be operative on all HF bands as well as possibly via Oscar on CW, SSTV and SSB. A special QSL card is promised — QSL via bureaux.—QST May 1979. ■

VHF-UHF
An expanding world

Eric Jamieson,
VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

Freq.	Call Sign	Location
50 004	PY1RO	Brazil
50.010	HL9TG	Seoul *
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.030	KL7CDG	Alaska
50 030	ZS6PW	South Africa *
50.035	ZB2VHF	Gibraltar
50.050	WA1ENX	Maine *
50 050	ZS6LN	South Africa *
50.075	HK3/4	Columbia (repeater)
50.080	TI2NA	Costa Rica
50.088	VE1SIX	New Brunswick
50.091	WA6JRA	Los Angeles *
50.093	WA8FTA	Michigan *
50.092	W7KMA	Oregon*
50.098	K7IHZ	Arizona *
50.100	ZS6HVB	South Africa *
50.101	FO8DR	Tahiti *
50.104	KH6EQI	Pearl Harbour
50.110	JD1YAA	Marcus Island *
50.110	KG6RO	Saipan *
50.110	AL7C	Alaska *
50.500	5B4CY	Cyprus
51.999	YJ8PV	New Caledonia
52.100	VK0BC	Casey Base †
52.200	VK8VF	Darwin
52.300	VK6RTV	Perth
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.450	VK2WI	Sydney
52 500	JA2IGY	Nagoya
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
52 900	VK6RTT	Carnarvon
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144 400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144 700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144 900	VK7RTX	Ulverstone
145.000	VK6RTV	Perth
147.400	VK2RCW	Normanhurst
145.100	ZL1VHF	Auckland
145 150	ZL1VHW	Waikato
145.200	ZL2VHF	Wellington
145 250	ZL2VHP	Palmerston North
145.300	ZL3VHF	Christchurch
145.400	ZL4VHF	Dunedin
432.400	VK4RBB	Brisbane
432.475	VK7RTW	Ulverstone

* Denotes attended operation.

Further to the closure of the Ballarat 432 MHz beacon briefly mentioned last month, it appears someone didn't get moving and renew the licence. No news yet of any resumed operation.

No news either of the 3D2AA and VK0MA beacons so they have been removed from the list this month as promised!

SIX METRES

To say six metres has gone quiet would be an understatement. It seems incredible that the constant good conditions of March-April-May should die so completely in June — it tends to indicate TEP and F layer operations are still mightily dependent upon equinoxial periods for best results. Many of our summer contacts have been possible in southern climes only because of Es enhancement, and without that in the winter there are no contacts!

Tony VK6BV has written from Northam outlining KH6EQI being heard in the West on 21-4, 23-4, 24-4, 25-4. 26th April was a good day all over VK, including the west, KH6EQI 0000-0135, peaking S7. KH6IAA copied 5 x 3 on 52.010 at 0007 for 15 seconds! Open to JA at these times also. Heard VK8VV on backscatter. JA2IGY beacon on S9 + 20 in Northam, most call areas from JA being worked at 9 +. 28-4 KH6EQI again. 29-4 worked KG6JIP. JA1, 2, 4, 7, 9 and 0. 1-5 HL9TG 5 x 9+. 6-5 HL9WI and plenty of JAs. Since then practically nothing has been worked from Northam or Perth either! Thanks, Tony. The DX will return!

FROM DAVID VK5KK

David's pen has gone very quiet this month, along with the DX. I wonder if there is any connection? But he does report several Es openings, with conditions and distances varying from QTH to QTH, so there have probably been Es openings to other areas interstate about which we know little. On 8-6 VK2BYX from 0205 to 0215Z via scatter (E), signals peaking to S9 but only readable 40 per cent of time, contact at 0211Z. 15-6 excellent E conditions to VK7 from VK5 from 0145 to 0910Z. Stations involved included VK5KK, VK5AVQ, VK7TW, VK7JG and VK7DA, all in Launceston area. Signals usual strong E type. Also worked VK2BA on E backscatter at 0820Z at S2-3. Not bad conditions for middle of winter. VK7 beacon audible through entire opening. 16-6 E opening to VK4 from 0600 to 0700Z with VK4ABP, VK4IS/P, VK4ZGI from S4-7. VK5SV and VK5ZMO kept the VK5 end up, most other likely VK5s being on their way to the Mt. Gambier Convention at this time. Not much info coming back from overseas so one can assume the DX being worked is not getting involved with VK! Several reports of VK4, 6 and 8 and YJ8OT openings but nothing too thrilling, to Japan from down here.

LET'S TALK TWO METRES!

Seeing the ionosphere has toned down a bit, David turned his interests to 2 metres which, as usual, didn't let operators down in winter. From 30-5 to 3-6 rather good tropospheric conditions existed over the southern portion of VK with all sorts of things going on. Like Repeater DX and 144 SSB and Repeater DX and Repeater DX . . . START: 31-6 VK3RTG beacon audible to VK5CK (Piccadilly in the Adelaide Hills, on top of the ranges almost!) 5 x 5 and to VK5KK S1 at 1000Z. 1-6: VK5SV worked VK2DAB, VK2BEV, VK2ADZ, all of Griffith; they were also worked by VK5CK and VK5KK. VK2DAB also worked VK5ZDR. VK2YNB from Griffith also through R8 Adelaide. Meanwhile VK5CK worked seven Melbourne stations and one Shepparton station. Strongest station at VK5KK was VK2DAB 5 x 8 at 1145Z, and stayed open to Griffith to 1225Z. VK3RTG again audible at S5 (two nights in a row!). Repeaters from all across VK3. Some contacts involved five States, VK1, 2, 3, 5 and 7. On 2-6 things didn't stop. VK3RTG again from 1000Z to Adelaide and VK5AVQ tucked right in under the hills! Mainly Melbourne stations from 1000 to 1600Z. Some of the call signs involved: VK3AUQ, VK3YFU, VK3ZY, VK3YMY/P and VK5ZDR, VK5ZPS, VK5SV, VK5KK, VK5AVQ and VK5CK. (Unfortunately VK5LP had to look on as the temporary 8 element beam at 21 feet didn't do much justice to the distant signals!) At 1400Z worked VK7ZAH on 144.1 up to S7. Throughout the opening tropo was not good enough for 6 metres over 300 miles. VK3AXV was worked by VK5AVQ on 6 and 2m. VK3AUG at Merbein worked VK5KK, VK5SV, VK5CK and VK5ZDR from 0045Z with signals to S9.

Small openings then to 21-6 with more tropospheric openings but not as good as early June. 22-6 VK5CK to VK2DAB S1 at 1230Z. Nothing on the Plains. 23-6 VK5CK to VK3YMY/P (on Mt. Macedon as in previous opening) at 1200Z. VK5KK to VK3YMY/P 5 x 1 at 1223Z. Conditions declined shortly after. During these openings Ch. 5 Mt. Macedon Repeater was quite consistent alongside the regular Ch. 7 Mt. William Repeater.

MORE ON TWO METRES

Two metres in the southern areas of VK may start to provide more consistent operating with the emergence of Dave VK5CK at Piccadilly, who in a short time since becoming fully operational on 144 MHz has made his name and call sign known in a lot of shacks to the East, and will be a force to be reckoned with in the future. The Adelaide Plains area in the past has had only a few operators able to successfully get over the Mt. Lofty Ranges with any degree of consistency, namely Mick VK5ZDR, Col VK5RO, Roger VK5NY, Peter VK5ZPS and very few others. Later on the scene came Tony VK5ZDY at Stirling, not far from VK5CK, also in an excellent position, but Tony has not been operating from there for some years now. Of recent times Keith VK5SV and David VK5KK both at Wasleys, about 35 miles north of Adelaide, came to the fore and are still there, but are further away from eastern contacts when the conditions are less than favourable, though they don't miss too much from their excellent open plans location! And now to keep adding to the activity from this end comes Dave VK5CK, who is keen and should have a reasonable degree of time to operate. He can run either 3 watts or 60 watts of SSB to a pair of 13 element KLM type LP yagis, and this set-up should give him long distance capability. So now we look to the VK2, 3 and 7 end of the Continent to do their share and look this way with more regularity. Contacts on 144 will be aided by the many repeaters currently operating, when early warning will be given by their reception, and giving an opportunity for operators to QSY to the lower end. Also you guys in the other States, don't overlook 432 MHz, there are a number of stations quite capable of sending a good signal, even VK5LP has 100 watts output on that band to a 16 element LP yagi 72 feet high and fed with heliax cable, and usable for CW, SSB, FM or AM — it's your choice!

STILL MORE ON TWO METRES

To further stir some of you people in VK2, 3 and 7, how about the following as an initiation for Dave VK5CK after getting up his stacked 13 elements. The list is printed to show 144 MHz SSB is not yet dead! Dave first heard VK3RTG beacon on 31-5 at 2330Z S2. Then on 1-6 between 1038 and 1200Z he worked VK3AMY, VK3ARS, VK3YMS, VK3BKF, VK3YLD, VK3YNV (Shepparton). On 2-6 worked VK2DAB, VK2ADZ and VK2YEZ, all at Griffith, VK5OA Mt. Gambier, VK3BPH Warrnambool, VK3ZYU Glen Waverley, VK3BHS Stawell, VK5NC Mt. Gambier, VK3YII Frankston (who was 5 x 3 until a meteor ping lifted his signal to 5 x 9 + 20!), VK3YOU Melbourne, VK3AUR Halls Gap, VK3ZUK, VK3ZY, VK3AUQ, VK3BCY, VK3NM, VK3YFU, VK3AIE, all of Melbourne or suburbs, VK3YMY/P Mt. Macedon, and VK7ZAH Launceston. All these stations were worked between 1218 and 1420Z with signals varying from 5 x 1 to 5 x 9 + 40! Even Kevin VK7ZAH was 5 x 9! On 3-6 VK3ZY Melbourne 5 x 9 + 20 at 1500Z and VK3AUG Merbein next morning at 0045Z S3. VK3ZY was also worked with the IC202 on its own whip antenna at 5 x 1.

During the tropo opening many repeater contacts were made, including 17 to interstate stations. At 1000Z on 2-5 Mt. Ginini repeater heard as a heterodyne against Mt. William. Incidentally, Mt. William repeater was weaker throughout the opening than Mt. Macedon. Also Dave heard repeaters on Ch. 3 and 4, worked through VK2RGF at Griffith, also R8 at Mildura, and idents from Wodonga repeater. Finally, on 16-6 during the Mt. Gambier Convention VK5CK worked VK5AVQ and VK5KK, who were standing on the side of the mount at Mt. Gambier holding a 2 element beam in their hands at 5 x 1 on 144.1

The above gives you some idea what can be done if you are around at the right time, and the equipment is going! Let us all hope this is only the forerunner of many such openings — there is very little to beat the thrill of a widespread opening on 2 metres, you never know how far signals may travel. And there still remains that possibility that New Zealand will be worked again from VK5 some time, perhaps this time on tropo and not Es!

TWO METRES FROM TASMANIA

VK7ZTA writes from Lenah Valley with a report of the opening on 2 metres on 2-6 when he heard the VK1 repeater from Hobart, with VK1RC working VK2ZYM at 0030Z. He gave a call and worked VK1RC, VK1AOP, VK1DS, VK1FT, VK1ZAH, VK2ZYM, VK2YNB (Newcastle), VK2ZLX and VK2AVA all about 4 x 1 signals. Adjourning to a nearby mountain with a 5/8 antenna and IC202 and IC22S, and via Ch. 7, worked VK1, MP, KV, RP, ZAD, BX,

ZBJ, VK2, BEV, DO, ZLX, FD, AMG, ZMP, ZDJ, RX, ZRJ, ASM, ZBQ, RJ, BZX, YWX, YKV and VK3ZLK, finishing at 0315Z when R7 faded out. Via R5 Mt. Macedon worked VK3 BPH, AEU, YRP, BNU at 5 x 3. At 0615Z VK3BBB was heard on R2 at Hobart, so worked him direct on Ch. 40. Returning home he worked some more signals through R7.

Thanks for writing the above. The moral of all this repeater activity seems to be that if conditions are that good, did anyone really try to work simplex, say Ch. 40 or Ch. 50? With so many small rigs around these days, it is not much hardship to run up to some local high point with a 5/8 antenna and get into the DX direct. I guess this would be more rewarding than being confined to repeaters only. It depends on your point of view. The above correspondent did show it was possible to work one station on Ch. 40, had others at the other end been willing, perhaps more might have been worked.

VK0BC BEACON FUND

There hasn't been a lot of response to this suggestion yet. Gil VK3AUI has offered help, and a letter from VK4NOB (note the kindness of a Novice operator) has offered financial support as well. We already have the offer of an amplifier from David VK5KK to help lift that 300 mW to a respectable level. So what about it, you guys, especially those in VK3 and VK7, which operation from the south will obviously suit best. Write a letter to me indicating what you are prepared to give, but send no money at the moment. For further information I refer you to the original article in May 1979 AR.

FM BEACON

In a departure from the usual, Barry VK2AAB has written to say the Hornsby and District Amateur Radio Club has made a project to construct a beacon, mainly for morse training, but useful for other purposes. It is operational 24 hours a day on a frequency of 147.400 MHz FM, with the call sign VK2RCW (that's appropriate) and the morse is generated by a 2650 microprocessor using ASCII data from a cassette tape. It has been operating successfully from Barry's QTH for six months. No details as to power or antenna, but it will be a useful addition to our beacon list. Thanks, Barry.

MICROWAVE NEWS

Lyle VK2ALU via "The Propagator" indicates enquiries are being made to locate amateurs presently interested in getting on the 10 GHz band. So far the following have been found in VK2: VK2AHC Sydney and VK2YCN Gosford, with operational transceivers on 10 GHz; VK2BBY and VK2ZPC with Gunnplexers for future use on 10 GHz; VK2ZAC with other equipment being made up for reception or transmission on 10 GHz. Others are known to have "X" band gear, but not operational to transmit or receive in the Amateur 10 GHz band. Lyle would be interested to hear from any amateurs in VK2 who are working towards getting equipment on the 10 GHz, and I would think he would be most happy to swap experiences with others who may be heading towards that band from other areas of VK. Write Lyle Pattison VK2ALU, QTHR.

STOLEN

While attending the Mt. Gambier Convention over the weekend of 16th and 17th June, Mark VK5AVQ had his FT221 Yaesu 144-148 MHz transceiver stolen from his car. Serial number is 6F307750. When stolen it had an Icom (202 style) microphone and normal DC cord but no AC cord. The rig has some other internal modifications which are apparent to the astute eye. This includes a U310 FET pre-amp. Any information to be passed on to the Mt. Gambier Police or VK3AQR or VK5AVQ. A slight operational fault exists on FM which concerns RF getting into VOX circuitry and causing the transmitter to hold in and "cycle" when the PTT is dropped. This can be noted on air. That's most unfortunate, Mark, and I sincerely hope that the equipment was not stolen by one of the participants at the Convention. However, the caravan park from where the equipment was taken on the Sunday night after the Convention was full of various people, so it could have been taken by anyone on the spur of the moment.

TESSA NEWS

From "Radio Communication" of June 1979 comes the following which will be of interest to many, especially those concerned with 432 MHz records.

"Following the success of the 144 MHz and 432 MHz operations by the Tessa Group, ZE2JV has begun beacon transmissions on 432 MHz. He is using 100 watts into a pair of Quagi antennae stacked horizontally. As reported in last month's 4-2-70, these signals have already been received by George Vernakis SV1AB in Athens. The distance involved, approximately 6300 km, is the longest path over which 432 MHz signals have been received without involving the use of moonbounce. Attempts were to be made to make a two-way QSO over this record-breaking distance, but unfortunately ZE2JV's equipment was damaged by fire. To complicate matters, the fire was extinguished by a gardener with the assistance of a great deal of water! It is hoped that the equipment can be repaired soon so that these most interesting tests on 432 MHz can be resumed over the path between Athens and Salisbury.

"The Tessa Group is also co-operating over plans to add a 432 MHz output to the beacon transmissions from ZS6DN. Other TE beacons in the planning stages include one from Pete Sawyer ZS1U, who should by now be beaming 144 MHz signals north from Cape Town. EA3ADW now has a 1 kW beacon on the air on 144.111 MHz from 1730 to 1930 GMT daily. Amateurs in Italy and Yugoslavia have also indicated they would like to join in the Tessa beacon TE project in the near future. SV1DH has a 1 kW beacon feeding an 88 element multi-beam firing towards Rhodesia, and it will be most interesting to see how far this high powered transmission can reach via TE on 432 MHz.

"The Tessa Group has a regular net on 28.333 MHz at 1500 GMT to discuss the day's TE reports. This frequency is monitored continuously until at least 1930 GMT so that stations can immediately be informed of TE openings. Anyone who would like to assist the Tessa Group with these experiments on 50, 144 and 432 MHz are invited to join in the above net and contact the net controller, Ray Cracknell ZE2JV."

All that of course, apart from being very interesting experiments, indicates to VK amateurs that they should not be resting too much on their laurels now that the 432 MHz record is held in VK, it may not be too long before it is taken away from us after reading the above. It seems VK stations should be making some efforts to work across to New Zealand or Japan on 432 MHz, and it is probably not stupid to suggest looking towards Africa, particularly in the first instance on 144 MHz from VK6. If I (VK5LP) lived on the west coast of WA I would certainly be doing something about it — it is no use these days saying it cannot be done — while you are saying that someone is likely to be doing it elsewhere!

SMIRK DXDC

Bill VK2HZ has sent me a small supply of SMIRK DXDC application forms which will save any qualifying VK amateur having to send to the US for a copy. Bill also has copies. I note with interest that an added requirement has been inserted on the application, viz.: All contacts made must show proper band segment operation for both working parties, i.e. for VKs 52 MHz." With that I most heartily agree, following especially on what was written last month on the subject of out-of-band operation. I am pleased also to see steps are being taken overseas to disallow any contacts wherein a QSL does not indicate at least that the VK contact took place on 52 MHz, so any award collectors are going to need some further contacts with certain stations somewhere along the line.

My present main concern is the fact that I don't want to see any undermining of our position here in VK by thoughtless operators, selfish operators, who cannot wait for the right contact, particularly when we have WARC 79 coming up, and with quite a lot of ground work already done for a possible return of 50 MHz to the amateurs. I don't want to appear to be a goodie-goodie, but I am firm on this situation.

GENERAL NOTES

I was surprised to see the May 1979 issue of "Break-In" does not contain any VHF notes! I cannot recall ever seeing an issue during the past 16 years which has not contained such notes. I hope this is not an indication of likely 52 and 144 MHz interest in the future over there.

I note from "Break-In" of a letter circulating to those interested of what their thoughts are on changing their repeater offset from 700 kHz to the more usual standard (and that used in VK) to 600 kHz. It still appears unlikely any changes will be made, however.

VK5MC continues to have 432 MHz EME contact, VK3ATN is working towards getting back on to EME and ZL3AAD has heard some stations via the moon. His transmitter is almost ready to go.

I hope next month to be able to pass on some interesting information regarding the operation of the KLM type yagis, especially the new style 13 element types for 144 MHz. Tests are being carried out here. Suffice to say at this time that they are capable of giving outstanding performance but they are not as readily reproducible as you might think, there are a number of factors which can upset their performance, so be careful. This equally applies to the 7 element six metre type.

Well, it's been a different lot of information this time. The winter conditions have shifted emphasis from six metres to the higher frequencies, and this situation will probably exist for another couple of months. The copy this time may seem orientated around the southern States, but that seems to be where the main activity is centred. I occasionally receive information from VK4, nothing from VK8 for six months, but having made a phone call to Graham VK8GB I am hopeful he will let us know soon how the last six months has been on 6 and 2 metres in Darwin. I could do with more information from VK2 and VK6, but I do thank Tony VK6BV, who is pretty regular with his information. But what about the northern areas of VK6?

As the Editor has been very good to me over the months of high activity in giving me considerable space for our notes, I will give some respite this time and let him have some more room for something else by closing now with the thought for the month: "History has seen wars that used up less ammunition than a cease-fire does today."

STOP PRESS ITEMS

SIX METRE PORTABLE OPERATION

Paul Brinsden VK3YFJ will be operating portable on six metres for six weeks from the 1st August.

Paul will be portable between Tarcoola and Mangoorie during a microwave equipment installation trip.

Paul works for NEC, who have the contract to supply and install microwave radio equipment which will be used for communications along the new standard gauge line to Alice Springs.

During the trip Paul will be operating portable in style with a reasonable rig feeding a reasonable antenna which will be on a portable tower.

Look out for Paul VK3YFJ during August and September.

YB0X CONTACTS

David VK5KK has now become the proud possessor of two cards for YB0X DXpedition (52 MHz), being one of only six (VK) stations to contact said station. In fact, the only station below the 20°S line which is generally the stopping point for so much DX. The following are the results of the operation.

"It is our great pleasure to send you this information reporting the successful result of 'YB0X', the tentative operation, for 6m propagation test which has been done at Java Ancol Dreamland, Jakarta, from April 29th to May 7th, 1979.

This remarkable project has been authorised thanks to the big efforts of IRARI (Organisation of Amateur Radio Indonesia) staffs, particularly General Suwondo YB0AT, the President of ORARI, and Mr. Kwik YB0CJ.

We, five goodwill Japanese operators, joined this operation co-operating to YB operators (JA1UT, JA1UPA, JJ1CEI, JA2TTO and JH4RUG).

The details of QSOs are as follows:—

HF (21, 28 MHz band) 3,762; VHF (50 MHz band) 2,156; Total QSOs 5,918.

Details of 6m QSOs: JA 2,133, VK 6, H44 3,

P29 2, KG6 8, KH6 1, HL9 1, CR9 1, DU 1, Total 2,156.

The rigs we used were FT-625D (Yaesu), FTV-902R + FT-901DM (Yaesu) and antenna, 50T4 (Masspro), 6m 6 el. Yagi and TA33Jr for HF

All QSLs shall be handed by JA1UT.

We are much appreciated for your co-operation through the operation and hoping FB DX and best 73s OM.

Yoshi Hayashi JA1UT.

QTH: 4-20-2, Nishi- Gotanda, Shinagawa, Tokyo, Japan 141."

LIST OF VKs WORKED BY YB0X

29th April, 10.36Z, VK8GB; 30th April, 01.59Z, VK5KK; 1st May, 08.31Z, VK8ZBB; 1st May, 08.34Z, VK4RO; 1st May, 11.44Z, VK8VV; 3rd May, 11.13Z, VK8VF (CW).

All were on 52 MHz. The VK8VF beacon was only heard, and not worked.

Congratulations to all six concerned and commiserations to VK5LP and VK5RO, who heard YB0X on 30-4-79 but unable to make contact.

LATE TWO METRE NEWS

A tropospheric opening between VK2, VK3, VK4 and VK5 took place on Sunday, 24th June. Contacts from VK3 to VK2 were common with other areas getting in on the action as well, including VK3 to VK4.

73. The Voice in the Hills. ■

WICEN

Ron Henderson VK1RH
Federal WICEN Co-Ordinator,
53 Hannaford St., Page ACT 2614
Ph. (062) 54 2059, A.H.

MAP READING

Continuing with our theme of WICEN training, the WICEN operator will often be asked the question "Where are you?". Replies based upon local knowledge are frequently given but these presuppose that the questioner is equally familiar with the countryside. To overcome this difficulty a system of map or grid references is used in conjunction with grided maps.

Maps vary in scale and date of compilation, however the most common ones are Survey Corps even the older inch to the mile (1 : 63 360) scales. or National Mapping 1 : 50 000 or 1 : 100 000 or Grid intervals are either 1000 metres or 1000 yards for older maps and each grid line is labelled with a bold two digit number, plus other smaller digits which should be disregarded. Grid references are normally given to six figures, that is three figures for eastings, followed by three for northings. The first two figures of each sub-group are the grid line digits, the third is an interpolation to give the locations to the nearest 100 metres (or yards). Similarly a four digit grid reference defines a 1000m x 1000m square and may be adequate for some purposes.

Instruction on map reading is best taught as a student involvement activity on a WICEN course. applicable to the likely local area of operations. The following items should be covered using a map Indeed it is a good idea for each member to purchase his own local map.

- Marginal notes.
- Scales.
- Symbols and legend.
- Grid references (there is a worked example on each map).
- Contours.
- Orientation for direction and position using compass or prominent features.
- Magnetic and grid variation.

Maps are easily mounted on desk type blotter boards with clear sheet plastic (TALC) cover sheets. Markings on this cover sheet can be made with chinagraph, omnichrome or grease pencils, then erased when no longer required.

Useful training in map reading can be achieved during exercises by locating mobiles at grid references and by not using prominent local features by name.

WICEN FORMALITIES

I covered in a recent article the contents of a local WICEN plan which relates to WICEN involvement in an emergency. Allied with this are a number of formalities which apply at all times, not just in emergencies. These are:

Membership of WICEN — Registration, training and allocation of duties.

Accreditation with Police and Emergency Services — Identification cards and car stickers.

Post and Telecom Liaison — Routine matters, exercise clearances, emergency call-outs. Note a single point of contact — Co-ordinator to DRI.

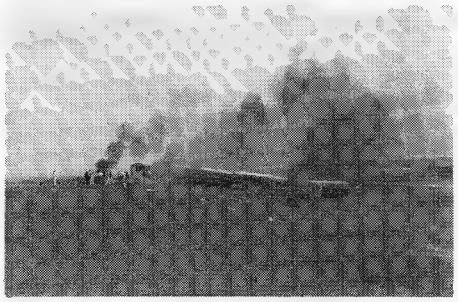
Insurance and Compensation — Applicable for training, exercises and emergency call-out. Personal liability, personal accident and property loss or damage. (See AR June 1979.)

Powers of Command — Who is the operator responsible? Who may give lawful commands? Limit of duties is essentially communications.

Obviously many of these matters are subject to regional variations. It is my aim here to provide you with a check list to lighten your workload and provide a basis for planning. Please make sure your group has considered them as they are as important as voice procedure or map reading.

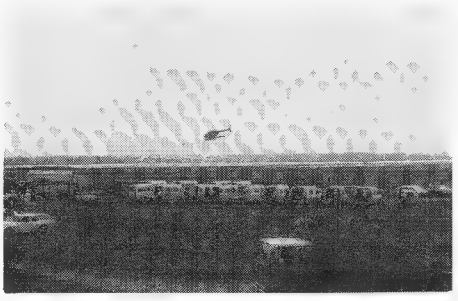
1978 AIR CRASH EXERCISE

NSW WICEN members Ray Gill VK2BRF, Alan Nutley VK2BNA, Mike Richter VK2BMM, Barry White VK2AAB and Gareth Davey VK2ANF were invited to attend along with the other 200 or so people present.



Buses loaded with "injured passengers" simulate aircraft fuselage on fire.

Foam cannon in action — a very effective fire control device.



Plenty of ambulances available, along with helicopter transport service.

I believe that these photos are still of current interest to members as they demonstrate some aspects of emergency situations, and also the authorities recognition of the role WICEN can play. ■

YOU and DX

Mike Bazley VK6HD
6 James Road, Kalamunda W.A. 6076

Apologies for the fact that there was no DX column in the June issue of AR. Bill's column, VK5VW, showed under my heading and the copy sent by me appeared to disappear into the system. (Humblest apologies — see July issue.—Ed.)

DXpeditions are considered by some to be the lifeblood of DXing. How, they ask, is one able to contact those uninhabited islands unless someone takes the trouble to go there and put them on the air? This is true, of course, but it does raise the point if they are uninhabited why should they count as DX countries? Is there any real justification in calling a rock that is just above the ocean eight hours out of twelve a country? The recent 7J1 DXpedition is a case in point. This, though, is no reason for complaining about a DXpedition — if someone wants to work all the uninhabited islands on this earth then let him, provided he does not cause too much interference to others who have not the same interest. It is in this area that I believe the DXpedition does a disservice to Amateur Radio.

Let's be honest. Have you ever heard a DXpedition, on say 14195, stating that he was tuning 14200-220? Without any further thought on your part have you swung your VFO into some area of that frequency range, before listening to see if the channel was occupied by someone in QSO? I have! As I said, let's be honest! Your answer may be "Well everyone knows that 14195 is a DXpedition transmitting frequency and they usually listen 5 to 25 kHz above". True — but what happens when the DX station says he listens 14200-250 and then changes that 30 minutes later to 14140-14160 and then changes that to 14160-15180? The The resulting chaos is no ordinary QSOs for anyone in a frequency range of 14140-14250. Well that's 20, you may say, it's only to be expected. Well this writer heard the recent 7J1 DXpedition listening for repies on 40 metres and moving his listening range between 7175 and 7250 in the space of 15 minutes. Imagine what that did to local and other QSOs in the States.

After all the above, I suppose I am making a plea to DXpeditions to consider other users on the bands and the havoc that they can so unwittingly cause and at the same time we, the chasers, should also remember others.

The spate of stations signing with the ITU suffix recently were in connection with the ITU contest. Those with prefixes ED, EE and EF go via the EA bureau, TK via REF and: 8J via JARL. (EE4 operating from EA4, EF6 from EA6, TF from F and 8J3 from JA3, etc.)

From Eric BERS 195, comes information that VR1P and KB6 (both the same island but counts as two countries!!!) will become part of Kiribati, the new name for the Gilberts, in 1980. So there's two more off the countries list.

Useful DX has been heard/worked from VK on the CW mode during the past four weeks (May 25-June 21) and may be of interest to those chasing DX on bands other than 20. At least you know what is active, for example, from the lists received comes the following, all CW 3.5 MHz, K7CA/HC1, KL7AF, 5W1BX; 7 MHz, FR7BW, GU4EON, HD1A, J7DD, LU3ZY, UJ8JAS, VQ9KK, ZE3JO, ZS5LD; 21 MHz, CO2PY, CP7GM, CR9AJ, HD1A, HI8LC, KV4KV, KZ5NW, SV0AA/5, 4S7RM, 5Z4CW, 9G1LR; 28 MHz, FB8XV, FR7BW, FW0WW, WA7JRL/SU.

Those KP4AM/D QSLs are now reported to be on their way at long last.

LU3ZY is still being reported in the States as showing on 21035 after 2330Z.

If you need Franz Joseph Land, UK1PAA is regularly QRV on 14030 from 1400Z.

DX YOU MAY HAVE MISSED!!!

JF1IST/7J1 — Okino Torishima — QRV June 11th-18th.

FW0WW — QSL via W9GW.

DA1WA/HB0 — QSL via DJ0LC.

VE1AIH/1 and VE1AST/1, Sable Island — QSL both via VE1AIH. They will be back on Sable Island in July.

RUMOUR CORNER

There may be some operation from CE0X within the October-November period, also strong rumours of activity from XZ. Others are looking at the possibility of an extended 601 operation and finally there are rumours of a West Africa DXpedition covering TL, TN and TT.

I would suggest that you check 14195 and 14025 regularly. The chances are that one of these will show.

In a QSO with SV0AA recently I was told by Jack that he would definitely be on from Rhodes again this year (SV5). Possibly in October or November, with a view to catching one of the big CQ contests.

Apologies for such a small offering this month but work QRM has beaten amateur radio. Watch those long path openings August-September. Very many thanks to BERS 195, VK4KX, VK6AJ, VK6LK and ZL2MM for information. Happy hunting, 73 Mike.

QTHs YOU MAY HAVE MISSED

A4XGY — Via K2RV.
CP5GK — Box 2659, Cochabamba.
FH8CL — PO Box 20, Mayotte, via Reunion Island.
N0DX/H44 — Via W0PAH.
HD1A — CW operation, via K7CA/HC1.
J7DD — Via W2OB.
KH3AA — Box 69, APO San Francisco 96305.
K0BO/KH8 — Via W0PAH.
KZ5BU — Via W0PAH.
OA4UI — Box 538, Lima.
OD5LX — Via SM0GMG.
OH2BP/OH0 — PO Box 928, Ouioi, Helsinki 10.
WA7JRL/SU — Via W8LZT.
VP2MOC — Via K2YY.
VS500 — Via N200.
VR6DX — Via W0PAH.
VR6HI — Via ZL1AD1.
XE1FR — Via W5QK.
YJ8OT — Via VK3OT.
ZF2CL — Via DK7PZ.
5H3GK — Via SM5AWO.
9N1BMK — Via JA8BMK.
9X5PM — PO Box 863, Kigali, Rwanda.

EXPEDITION MONACO 1979

Date: 30.9.1979-12.10.1979.
Call: 3A0JD.
QRG ± QRM.
CW: 3.550, 7.025, 14.050, 21.15, 28.150 MHz.
SSB: 3.700, 7.050, 14.200, 21.300, 28.300 MHz.

QSL only via HB9 QSL Bureaux, PO Box 9, Ch. 4900, Langenthal, Switzerland; or direct to HB 9 ASJ, Leopold Spreitzer, Hopfernstrasse 4, Ch. 4900, Langenthal, Switzerland.

LETTER RE F8DW

A letter from Dennis Rogers VK5NOK dated 19-6-79 mentions the following:—

On 13-5-79 I made contact with F8DW Doc Gibert, Belfort, France. The conditions were really excellent, and we were both excited to have such good signal reports. Dr. Paul Gibert's personality came across with remarkable clarity. I think many VK amateurs will have worked this splendid old enthusiast, however for those who do not know him, please allow him to introduce himself in his own words:—

"I am a real OT — using a coil from a model T Ford transmitted 50 miles in 1920! Was able to copy W1BCG. Had contacts with several "spark stations" late 1923 (three transmitters, six antennas).

"I am an old airman and flew prototypes, winning two races. I have had 60 cars since 1928, a dozen Harley Indians — still got the last XL 1000 cc Harley.

"I am 90 years of age, weigh 102 kg, no white hair, and all my teeth. I like hunting, drinking, sailing, and think a young girl a thing of beauty when she is paying cash for the transmitter, and the expense of keeping my pipe going!!

Dick KV4AA.

"73 from the Old Bug O' De Woods, Doc Gibert."

I think you will agree that this is indeed a "rare old bird" and as a young novice (albeit 60 years old) I feel privileged to have met him.

VK5NOK. ■

48,100 QSOs in 1978

With a last minute spurt on December 30th and 31st, which netted 540 QSOs, Dick KV4AA wound up 1978 with a total of 48,100 contacts. This was an average of 131 per day or one QSO every 11 minutes of 1978.

About 65 per cent of the contacts were on CW with the balance on SSB. A total of 199 countries were worked with only a couple of them being "chased". Assorted equipment held up nicely as did Dick's 73-year-old health except for a "sticky" attack of shingles, last May, which slowed operations only slightly.

Continuous calling by European stations on CW (even during QSOs) and the co-operation of USA SSB ops, plus contest operations, made large totals easy. KV4AA took part in just about every contest that turned up, including a few where the origin is still not known — otherwise QSOs, although short, were not of the "contest" or "DXpedition" variety. This makes a difference of three QSOs per minute versus one every three minutes when things are humming.

All this started in 1976, when Dick's AJ3AA bicentennial call resulted in 35,335 QSOs or an average of 96 per day. A goal of 36,500 contacts was set for 1978, 100 per day. When this was passed on October 19th a new goal of 45,000 was set. This was met on December 14th, and another 3,100 were worked.

Thus a total has been set for whatever it's worth. It is realised that certain factors are a "must" for such totals like a fairly "exotic" call and plenty of time. This will limit most. KV4AA was not on continuously, as he works daily until 1 p.m. and, until the latter part of the year, was seldom on after 7 p.m. Stations contacted twice, or more, the same day were only counted one time unless the mode and band were different. In going for high totals a QSO with a WD4 can be just about as satisfying as a VU2 contact.

Invaluable aid was given the project by Yasme (WA6AHF) and other west coast hams who handled the KV4AA QSLing chores.

KV4AA's three year total now stands at 115,280 contacts. Dick says "This year we rest, but t'ain't easy getting used to". ■

INTERNATIONAL NEWS

April 1979 QST advises that Bud Panchard VE3UD has been nominated to the Canadian delegation for WARC 79 by the Canadian Administration. He is well qualified to represent Amateur Radio on the delegation.

FIJI

News has been received that the Fiji Association of Radio Amateurs has been re-started. President is 3D2CM and Joint Secretaries 3D2UP and 3D2BM. The address for the Society and QSL bureau is PO Box 184, Suva, Fiji.

SEANET CONVENTION

Will be held this year in Penang, Malaysia, from 30th November to 2nd December. MARTS states hotel bookings are heavy at that time of the year and they ask that details be sent to them before the end of August. The venue is the Eastern and Oriental Hotel, 10 Farquhar Street, Penang. MARTS' address is PO Box 725, Penang.

QRP OPERATORS

There has existed since 1972 the G-QRF-Club, with over 500 members in 25 countries, to promote interest and growth in low power (5W DC in or PEP and under) communications. Membership is open to any amateur or SWL and the annual sub is only £2 or $US3, for which you receive their quarterly magazine "SPRAT" containing QRP technical circuits and other useful items. International QRP calling frequencies are — for CW 3560, 7030, 14060, 21069 and 28060, and for SSB 14285, 21285 and 28885. For further details write to G3BUE, "Alamosa", The Paddocks, Upper Beeding, Steyning, West Sussex, BN43JW, England.

RECIPROCAL LICENSING

The number of enquiries about reciprocity of licensing seems to be on the increase. Please see AR January 1978, page 25, for details. ■

QSP

RESIDENTIAL AREAS BAN ON TXS

A prohibition of radio transmissions in residential areas is under consideration by the Senate of Oregon State. The Government Affairs Co-ordinator for the Oregon Environmental Council said that medical studies "have found that persons living next to electromagnetic sources often experience serious health effects, including rashes, headaches, dizziness and tingling sensations".—Ham Radio report May 1979. ■

MML 144/25 25 WATT 144 MHz LINEAR POWER AMPLIFIER & LOW-NOISE RECEIVE PREAMP

*** RUGGED 65W DISSIPATION PA TRANSISTOR * ULTRA LOW-NOISE RECEIVE PREAMPLIFIER * EQUIPPED WITH RF VOX AND MANUAL OVERRIDE * L.E.D. STATUS LIGHTS FOR POWER & TRANSMIT * SSB/FM, AM and CW.**

SPECIFICATION

LINEAR AMPLIFIER
Power profile: 25 watts typical output for 3 watts input
Frequency bandwidth: 144-148 MHz at — 1dB
Power requirement: 13.8 volts at 2.8 amps for 25 watts output
Quiescent current : 75mA nominal at 13.8 volts

RECEIVE PREAMP
Overall gain: 10dB typical
Overall noise figure: Better than 2.5 dB
Frequency bandwidth: 144-148 MHz at — 1 dB

Weight : 300g
Overall size: 150 x 65 x 47 mm

MML 144/100 100 WATT LINEAR POWER AMPLIFIER

* 80 watts minimum RMS output 100 watts RMS typical.
* Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
* Equipped with RF VOX and manual override.
* Frequency bandwidth 144 — 148 MHz at — 0.5 dB.
* 10 watts nominal for 80 watts output.
* Weight 4 Kgs.

PRICE AMATEUR NETT $295.00

MML 432/100 100 WATT 432 MHz LINEAR POWER AMPLIFIER

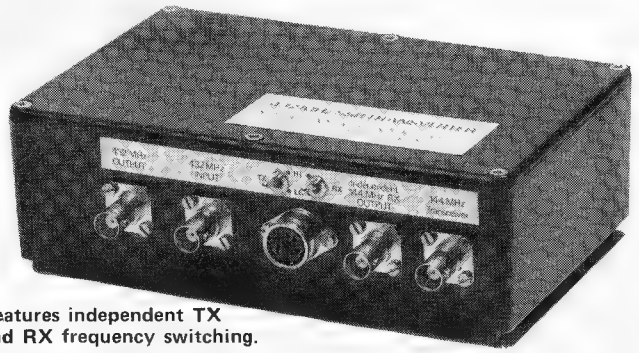
* 100 watts minimum output 10 dB minimum gain.
* Fully protected against poor load VSWR, overheating and excessive or reverse rail.
* Equipped with RF VOX and manual override.
* Frequency Bandwidth 435 MHz — 15 MHz @ — 1dB.
* 10 watts nominal input for 100 watts output. * Weight 4 Kgs.

PRICE AMATEUR NETT $435.00

MMT 432/144'S' LINEAR TRANSVERTER

UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES 432-434/434-436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8
FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receiver converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built-in automatic RF VOX with override facility * Built-in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

PRICE AMATEUR NETT: $315.00



Features independent TX and RX frequency switching.

MMT 432/28'S' LINEAR TRANSVERTER

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Second Crystal Oscillator gives two ranges: Low 432-434 MHz — High 434-436 MHz programming available to either Transmit receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch*Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp peak * Case size 187 x 120 x 53 cm. * Spare 432 input socket.

MODEL MMT 432/28 'S' PRICE AMATEUR NETT: $265.00

MMT 144/28 144 MHz LINEAR TRANSVERTER

FEATURES: Low noise receive converter 2.5 dB noise figure
Highly stable zener diode controlled 116 MHz oscillator
Rugged highly reliable PA transistor rated at 25 watts

Frequency Coverage : 144-146 MHz — Input frequency range : 28-30 MHz
DC power requirements : 11 - 13 volts (12 volts nominal)
Current Consumption : 300 mA quiescent 2.1 Amps peak

TRANSMIT SECTION
Input Impedance : 50 ohm
Input Modes : SSB, FM, AM, or CW
Input required for full output : 5mW to 500 mW (variable input attanuator)
Power Output : 10 watts continuous rating
Output Impedance : 50 ohm

RECEIVE SECTION
Overall converter gain : 30 dB typical
Overall converter noise figure : 2.5 dB maximum

PRICE AMATEUR NETT $197.00

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.
All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via sattelite or for normal VHF/UHF communications.

2 METER MOSFET CONVERTER: Noise figure typ. 2.8 dB. Overall gain typ. 30 dB. IF: 28-30 MHz. 9-15 V 20 mA. **PRICE AMATEUR NETT $47.00**

DUAL RANGE 432 — 434 MHz & 434 — 436 MHz Converter. Type MMC 432/28 'S' & MMC 432/144 'S' Input frequency ranges 432-434 MHz (low), 434-436 Mhz (high). I.F. output frequency 28-30 Mhz or 144/146 Mhz. Typical gain 30 dB. Noise figure 3 dB maximum. D.C. Power requirements 11-13.8 volts, 12.5V nominal. Current consumption 50 mA maximum. **PRICE AMATEUR NETT: $67.00**

1296 MHz CONVERTER; Mircostripline, Schottky diode mixer. IF: 28- 30 Mhz or 144-146 MHz. Noise figure: typ. 8.5 dB. Overall gain 25dB. Power requirements: 12 volts DC ± 25% at 50 mA. **PRICE AMATEUR NETT: $65.00**

VARACTOR TRIPLER 432/1296. Max. input at 432 MHz. 24 W (FM,CW) — 12 W (AM) Max. output at 1296 MHz. 14 W. **PRICE AMATEUR NETT: $74.00**

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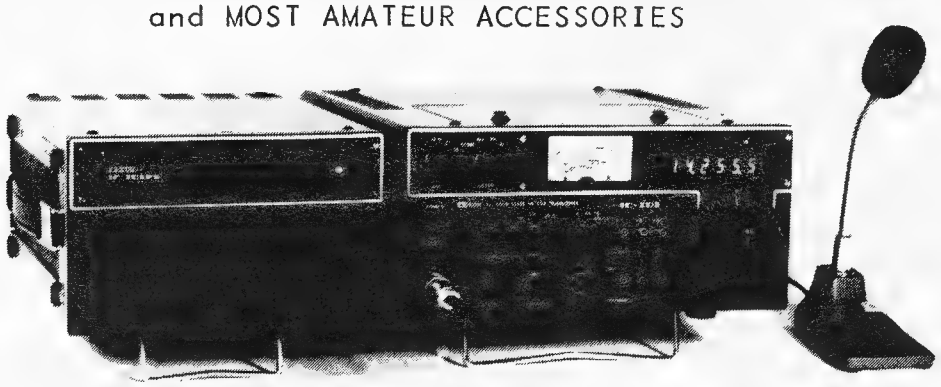

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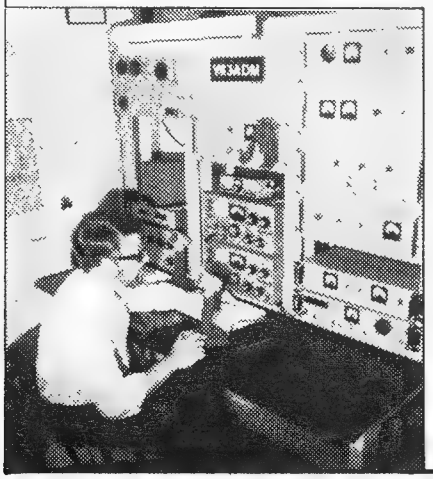

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CNW417	Daiwa incl SWR/PWR meter, 500 W $199 00
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MFJ16010	MFJ. Random wire tuner 160 10 M $71.00
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DR7600S	Heavy Duty with contro ler & mast clamps $259 00
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AS BL	Asahi 50 ohm for beams – $34.00
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FT101E	Yaesu $39 00
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ROY LOPEZ

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TH6-DXX 10-15-20M 6-el yagi $275
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RG-8U foam coax cable, per yard 80c
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GLP right angles RG-58U to SO-239 w/lock nut & cap, ea. $2.50
Double female connectors, ea. 80c
MLS right angles RG-58U to PL-259, ea.....90c
In-line mike sockets 3 & 4 pin, ea.....75c
Mike sockets 3 & 4 pin, ea. 75c

YAESU MUSEN PRODUCTS

FT-7 10-80M 12V DC transceiver $400
FT-301S 10-160M 12V DC transceiver $500
FRG-7 .5 to 30 Mhz receiver $300

NOVICE SPECIALS — TRANSCEIVERS

10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive $125

10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifer tuning transmit and receive $100

CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions $40

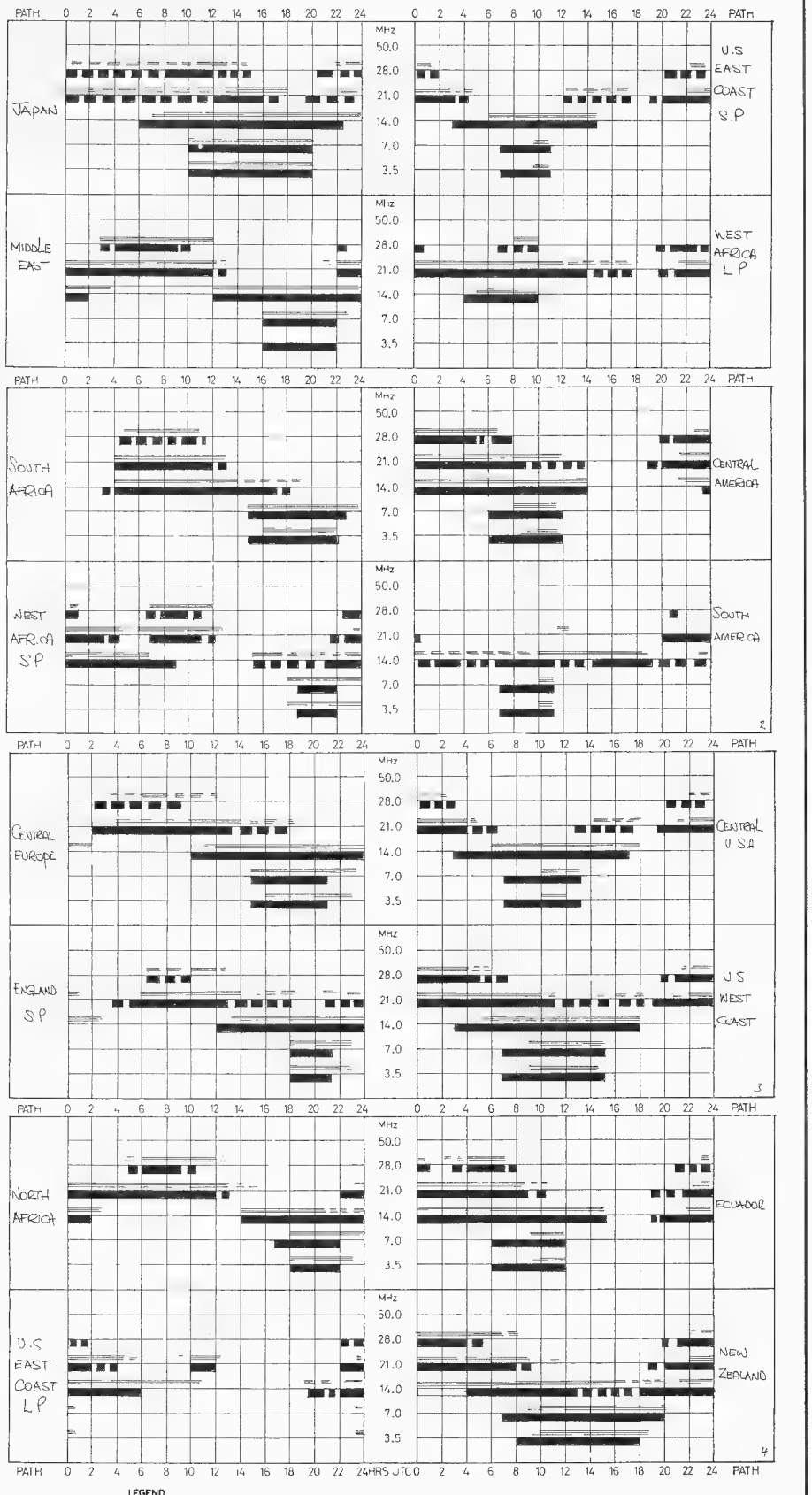
KYOKUTO FM-2016A 800 channel 2 meter FM transceiver with 4-channel memory & scanner $360

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor **Roy Lopez (VK2BRL) Manager**

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Ave., Flinders Park, SA

MEXICO DX AWARD

This award is issued by the Mexico DX Club for confirmed contacts with Mexico DX Club member stations.

Overseas stations are required to complete 3 QSOs with Club members. There are no band or mode restrictions to this award and all contacts must have been made since 1st January, 1973.

To apply, prepare a list showing the log details of the required 3 QSOs, plus the QSL cards, and forward to Mexico DX Club, PO Box 21-167, Mexico 21, DF, Mexico.

To cover the cost of return of your QSL cards and the award, please include 10 IRCs or $US2.00. There is no fee payable but sending IRCs or money will ensure the return of your QSLs and the award.

Note: Some members of the Mexico DX Club sometimes check into the P29JS DX net on 14220 kHz at 0700Z daily. Keep an ear on this net and you may be lucky to qualify for this award.

WORKED ALL MALAYSIA AWARD (WAMA)

The Malaysian Amateur Radio Society has announced a change in name and requirements for the WAMA Award.

The Award will now be known as the Worked All Malaysia Award (WAMA) and the rules are as follows:—

(1) All applicants for the award will submit a log extract witnessed and certified by another two members of the WIA or by any two council members of the WIA, one of which may be the Awards Manager of the WIA.

(2) The award is also available to SWLs, who must submit a log extract of QSOs heard as detailed in rule 3 and certified as in rule 1 above.

(3) The log extract shall show details of two-way contacts between the applicant's station and that of 10 (ten) 9M2 stations, 2 (two) 9M6 stations and 2 (two) 9M8 stations. The previous requirements of ten 9M2, ten 9V1, one each of 9M6, 9M8 and VS5 will stand till the 31st August, 1979, for the WAMA Award.

(4) All applications must be accompanied by 10 (ten) IRCS to cover post and packing.

Anyone submitting SEANET Contest results may state if he is claiming the award if he wishes as this can be verified by checking with the logs of the Malaysian stations entering the contest. However, 10 IRCs should be enclosed in the contest logs.

Applications for the award should be addressed to Hon. Secretary, Malaysian Amateur Radio Transmitters Society, PO Box 777, Kuala Lumpur, Malaysia.

Note: With the introduction of GCR rules, this award should appear more attractive to our novice operators as well as the established award hunter.

VIII MEDITERRANEAN GAMES AWARD

Here are the details of a once only award which should appeal to our 20 metre award hunters.

On the occasion of the VIII Mediterranean games taking place in Split from 15th September, 1979, to 29th September, 1979, radio clubs "MARJAN" and "ANTE JONIC" sponsor the award named "VIII Mediterranean Games". The rules for the award are as follows:

(1) This award is available to any licensed radio amateur or SWL.

(2) Only contacts with amateur radio stations from countries participating in the VIII Mediterranean Games are valid. Countries participating are — CN, EA, EA6, EA9 (Ceuta and Melilla), F, FC, I, IS0, OD, TA, SU, SV, SV9 (Crete), SV5 Dodecanese), YK, YU, 3A, 3V8, 5A, 7X and 9H.

(3) Overseas amateurs require 5 QSOs to qualify.

(4) Contacts may be made on any authorised band or mode.

(5) Instead of any country listed above, a contact with a station from Split having a number 9 in the prefix may be substituted. Only one such substitution will be permitted. Stations which may be substituted are:—YT9MI, YU9CBR, YU9CDL, YU9DX, YU9FH, YU9FW, YU9RBE, YU9RCZ, YU9RDB, YU9RJG, YU9RJT, YU9RKY, YU9RMG, YU9RTW, YU9RXK and YZ9MG.

(6) All contacts must be made during the period from 15th September, 1979, to 30th September, 1979.

(7) GCR List, 4 IRCs or $US1.00 (do not send QSL cards) should be addressed to Radio Club "MARJAN", PO Box 155, 58001 Split, Yugoslavia, Europe.

Good hunting. ■

FROM THE OVERSEAS ADS

Quite a bit of activity as many new products are introduced and many new models are released.

Trio-Kenwood have released a new transceiver, the TS180S, which is a new all solid state transceiver in the same class as their TS820.

Swan have released the Swan Astro 150, which is a new synthesised transceiver which owes much to both Swan and Astro. A very neat looking rig.

Dentron have released their HF200A HF SSB transceiver.

Comtronix are advertising their FM80, which is a synthesised 80 channel 10m FM transceiver.

Yaesu have released a new synthesised Handy Halgy, which features keyboard frequency entry and a small LED readout.

Henry Radio are marketing Narrow Band Voice Modulation equipment. This is the VBC3000 NBVM transceiver, which is a modern unit for use with a standard rig.

Hy-Gain have released a new tribander, the TH5DX.

MFJ have a range of antenna tuners. The MFJ961 and the MFJ962 have 1.5 kW rating and the MFJ984 has a 3 kW rating.

Drake have a 2 kW tuner with 160m capability. This is the Drake MN2700 antenna tuner.

Dynamic Electronics, Microcraft Corp., and Kantronics all have released Morse and RTTY copies which display the code received as a moving strip of LED alphanumeric characters. ■

INTRUDER WATCH

Alf Chandler, VK3LC

Z-CODE FOR POINT-TO-POINT SERVICES

For those members who are observing intruders in our HF bands the following samples of the Z Code will be of interest as many CW (A1) and F1 stations are using it, especially the Iron Curtain countries:—

(Asterisk indicates US Military Usage)

*ZAA — YOU ARE NOT OBSERVING CIRCUIT DISCIPLINE.

*ZAB — YOUR SPEED KEY IMPROPERLY ADJUSTED.

ZAC — Advise (call sign of) frequency you are reading.

*ZAY — Send on (kcs). Will confirm later.

*ZBI — Listen for telephony.

*ZBO — I HAVE TRAFFIC.

ZCF — CHECK YOUR CENTRE FREQUENCY, PLEASE.

ZCL — TRANSMIT CALL LETTERS INTELLIGIBLY.

ZGW — YOUR SIGNALS GETTING WEAKER.

ZHC — HOW ARE YOUR RECEIVING CONDITIONS?

ZNN — ALL CLEAR OF TRAFFIC.

ZRO — ARE YOU RECEIVING OK?

ZSH — STATIC HEAVY HERE.

ZSR — YOUR SIGNALS STRONG AND READABLE.

ZSU — YOUR SIGNALS ARE UNREADABLE.

ZWR — YOUR SIGNALS WEAK BUT READABLE.

ZYA — Cease traffic; send As on A channel.

ZXD — Send Dashes, please.

Lately another pulse transmission has been observed, and it is very potent and wide in kHz. The pulse is transmitted at 26 to the second instead of the old "woodpecker" at 10 to the second. Observations would be appreciated.

Alf Chandler VK3LC,
Federal IW Co-ordinator. ■

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

AUGUST

11	ZL QLF PARTY
11/12	REMEMBRANCE DAY "THE FRIENDLY CONTEST"
11/12	EUROPEAN CW CONTEST
18/19	SEANET PHONE DX CONTEST
18/19	SARTG RTTY CONTEST
25/26	ALL ASIAN CW CONTEST

SEPTEMBER

8/9	EUROPEAN PHONE CONTEST
15/16	SCANDINAVIAN CW CONTEST
22/23	SCANDINAVIAN PHONE CONTEST

OCTOBER

6/7	VK/ZL/OCEANIA PHONE
13/14	VK/ZL/OCEANIA CW
13/14	RSGB 21/28 MHz PHONE
20/21	RSGB 7 MHz PHONE
27/28	CQ WW DX PHONE

NOVEMBER

3/4	RSGB 7 MHz CW
24/25	CQ WW DX CW

20th ALL ASIAN DX CONTEST CW SECTION

Period: 30 hours from 1000Z 25 to 1600 Z on 26th August.

Operation on all bands.

Contest call: CQ AA.

Exchange: RST plus 2 figures denoting operator's age if male; RST plus 2 figures if female.

Point and multiplier: A perfect contact with an Asian station will count one point. The number of different Asian prefixes, per WPX rules, worked on each band is the multiplier.

Scoring: The sum of the points on each band multiplied by the sum of the multipliers on each band.

Note: Contacts with KA stations are not eligible, they are considered military stations.

Logs must be kept in Z (GMT) time.

Logs and summary sheets to JARL, PO Box 377, Tokyo Central, Japan, by November 30.

Full details from FCM. Please send SASE. ■

CW TAPE REVIEW

LEARNING MORSE CODE KIT

Recently we reviewed the booklet "Learning Morse Code" by Rex Black VK2YA, which is published by the NSW Division of the WIA. Since then we have received a complete "Learning Morse Code" kit. This contains the booklet plus two C60 cassette tapes.

After spending some time both reading and listening it was obvious that this is an excellent kit and provides the nearest thing yet to painless learning of the code.

S.W.A.R.S. CONVENTION

29/30th SEPT., 1979

AT YOUNG, N.S.W.

★

TRADE DISPLAYS
DINNER
COMPETITIONS
etc.

★

Enquiries:
P. PAGE VK2APP
'Stoneridge', Monteagle
N.S.W. 2594
(063) 83 6206

The student is introduced to the concept of morse code and carefully and progressively taught the elements of the code. The tapes and the booklet are used together and allow the student to progress at his own pace and yet have the presence of a tutor. Revision tests are included at appropriate points, consolidating the student's progress. By the end of the second cassette the student will be receiving five w.p.m. quite well, although more practise would be required to pass the novice examination. To cater for this two further tapes can be obtained.

A comprehensive section of the booklet covers sending of morse and it is here that a small blemish (in the opinion of the reviewer) is seen. The photograph showing the "key down" hand position shows the wrist being thumped some eight cm into the table. Apart from the bruising, this sort of exaggerated action cannot be sustained for very long. A little more care in set up and treatment of the artwork would have made this illustration on a par with the other excellent photographs.

Other sections of the booklet cover the Q-code and other useful information plus details of a simple QRP CW transmitter.

The quality of the audio on the cassettes is better than some tapes I have heard. One interesting aspect is the use of the voice to send morse before the audio oscillator is used.

Here in this kit is an easy way of learning morse at a cost of only $6.50. You can get your copy from

WIA NSW Division,
Education Service,
PO Box 109,
Toongabbie, NSW, 2146.
VK3AFW ■

QSP

CALL SIGNS

It is strange how some amateurs misquote their call signs by writing VK9-ZZZ or VK9Z.Z.Z. or VK9.Z.Z.Z. The suffix — i.e. "ZZZ" — is merely an alphabetical selection and therefore should not be differentiated from the remainder of the call sign. On occasion, the letters of the suffix have some significance, if the licensee has any choice at the time they are issued. Otherwise the letters are merely the next vacant ones in the alphabetical list kept by the issuing office. ■

Visiting Hong Kong

■

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MINIMUM: 1,000 PER DESIGN

Larger quantities for clubs at reduced prices.

QSP

OVERSEAS SOCIETY SUBSCRIPTIONS

The RSGB membership subscription rate will become £10 instead of £8 from 1-1-1979. The ARRL membership dues became $18 from 1-4-1979 in place of $12. All are for one year. Radio Communications March 1979. ■

COMPLEX EQUIPMENT

Writing in TT Radio Communications May 1979 Pat Hawker comments that the advice "Keep it working" becomes increasingly more difficult as equipment becomes more complex — and also, paradoxically, as components become more reliable. In the old days a high percentage of all faults could be traced and cleared by the straightforward process of "valve pulling". Today more and more of the equipment breakdowns can be traced to what are basically mechanical faults. Good mechanical design does not always go hand-in-glove with the ingenious electronics of modern equipment. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

FT-7, 4 mths. old, in excellent cond., with mobile cradle and original box, $340; Kraco 10m transceiver, 24 channel, with VXO, 15W output, in v.g.c., $100. Must sell both these rigs. G. Cooke. Ph. (03) 31 7222, ext. 1919, B.H.

Yaesu FL2100B, 1.2k linear, mint cond., multi-band op., few weeks old, $485; power supply, 12A, very suitable for use with Yaesu FT7B, $80. Ph. (03) 341 5913 Bus.

Yaesu 101B, one owner, plugs, handbook, matching mic., etc, no mods:, $585; ext. VFO FV101B, $135. Ph. (02) 631 7588 Bus., (02) 84 7170 A.H.

Katsumi Electronic Keyer EK-127, $35; Katsumi electronic keyer with memory, MK-1024, $120; two speed, reel, stereo tape recorder, Paros, $65. VK3ZAN, QTHR. Ph. (03) 306 9380.

Yaesu FT250 2m Transverter, brand new, never used, $200; Yaesu YC601 digital readout, excellent cond., $125. Ph. (02) 888 2475.

Yaesu FT-301 Digital Tcvr, fully solid state, 160-10m, 100W PEP output, 2 yrs. old, scarcely used, with FP-301 deluxe power supply containing 12-24h dig. clock and auto CW ident, also with matching FU-301 remote VFO, the lot at $1100, ONO. Must sell. VK3AVE. Ph. (03) 64 2525 Bus., (03) 311 2699 A.H.

Shack Clearance: Yaesu FT901DM with SP901 speaker and YD148 desk mike, 3 mths. old; Icom IC211, as new, complete in orig. pkg., $600, ONO; Yaesu YC355D freq. counter, $100, ONO; CDE Ham II rotator, $100, ONO; microlink ATV 10W Tx, ATV microlink convertor, power supply, 12 el microlink 70 cm beam, BMB 88/70 cm Jay beam, $300 the lot; SP520 speakers, $25. Greg McNamara VK3BIB. Ph. (055) 65 8593 Bus.

Complete RTTY Station — model 19 Page printer, $70; model 14 tape distributor, $20; model 14 typing reperforator, $20; motor and loop supplies, $40; EA terminal, $50; the lot, $170; all in perfect working order. VK3BLK. Ph. (057) 64 1238.

Pye Victor 2m Car Transceiver, 10W FM xtls 37, 50, 51, Simplex 2-8 repeaters, full handbook, $75, ONO. Allen Crewther VK3SM, QTHR. Ph. (03) 386 4406 A.H., (03) 630 5794 Bus.

Video Tapes, ½ in. on 7 in. spools, Scotch brand, $8 ea. VK2ZHM, QTHR. Ph. (02) 406 5338 A.H.

Hammarlund HQ 110 Rx, amateur 1.8 MHz to 54 MHz, AM, SSB and CW, also has variable bandwidth, $250, or best offer; Trio general coverage Rx, ideal for beginner, or for use as a tunable IF, 840 kHz 30 MHz, $190; spare tubes available for both. Contact John Blyth VK3BKT. Ph. (03) 62 4575, ext. 233, Bus., or (03) 288 2346 A.H.

FT75 Yaesu Transceiver, 60W, 5B, matching AC and DC supplies, matching VFO, 12 VXO xtals, mobile mount, clean, excellent working order, $350; second FT75 tcrv, matching AC and DC supplies, HB VFO, 12 VXO xtals, spare tubes, top working cond., $320; sturdy 4B trap vertical, Hustler, with radials, used for 1 month while TH6 repaired, $85; morse key and buzzer on sounding board, $5. VK3AFW, QTHR. Ph. 579 5600 A.H.

Yaesu Mobile Antennas: RSE-2A stub for 144 MHz, RSL-3.5 for 80m, RSL-21 for 15m, and RSE-2 gutter mount base; they work excellently, in good cond., not used much, but want to sell, were $85 for the lot, sell for $60. John Brereton VK5NHB, 27 Kent Ave., Brahma Lodge 5109.

Triband Beam TH3JR, as new, 20, 15, 10m, $140; Uniden 2020 txcvr and ext. VFO 8010, good cond., $600. VK3NMJ. Ph. (03) 789 3129.

Yaesu FL50 SSB Tx, 80-10m, 60W o/p; FR50 Rx, 80-10m, SSB/CW; FV50 ext. VFO for Tx, complete SSB HF station, suit novice, what offers; also Icom IC502 6m SSB tcvr, $150; also Heathkit SB610 monitorscope 1 kW rating, $100. L. White VK4AMF, 30 Oaklands Pde., Brisbane 4169. Ph. (07) 391 6160.

Magazines: Elektor Nos. 1 (Dec. 1974) to 45 (Jan. 1979), missing Nos. 9 and 20, best offer. VK2ZHI, 51 Ormond St., Paddington, NSW 2029. Ph. (02) 31 7573, after 6 p.m.

Kenwood TS120V Transceiver, S/N 912765, in mint cond., only 6 weeks old, $490, ONO. Mike Vale VK1VW. Ph. (062) 48 2348 Bus., 88 8994 A.H.

Genuine Vibroplex Semi-automatic Key, standard "Lightning Bug" model, new in original sealed package, $45, ONO. Ross Treloar VK2BPZ. Ph. (02) 239 5267 Bus.

"Home Brew" Linear Components, tuning capacitors 40-175 pF, 6 kV spacing, power XFMR 2500V 800 mA, many other sundry items, 10m GP antenna Stolle rotator. VK3NXX. Ph. (03) 527 4029 6 p.m. to 8 p.m.

10 MHz Rx xtals for repeater Ch. 1-8, Ch. 3 input Rx and Ch. 40, 49, 50, 51 Simplex Rx (Rx 2 MHz IF), $5 ea. L30142, QTHR.

Complete Collins S Line 32S1 Rx with 516F2 power supply, 75S3B Rx, 30L1 linear with four 527Bs, immaculate and has just been professionaly overhauled, this gear worked over 300 countries, surplus to requirements, ideal for the most discriminating operator. Roth Jones VK3BG. Ph. (03) 848 7945.

Yaesu FTDX400 Tcvr, exc. cond., has matching speaker, PTT desk mic., all HF bands, full 400W PEP, in-built 240V AC power supply, $425, ONO. VK2ZDJ, Griffith. Ph. (069) 62 4937.

Daiwa 2m Rx, 12V DC, 146-152 MHz, full price $40. VK2NSE, Box 64, Quirindi 2343.

10m Kraco, 24 Ch., A1 cond., best offer; 11m Kraco, 24 Ch., as new, best offer; I will modify free if xtals supplied; multi-meter with transistor tester, A1 cond., very little use, $35; Radio Television and Hobbies from 1958-1973 and some later editions, offer. J. B. Stevens VK2NES, QTHR. Ph. (02) 476 1671.

Oscilloscope Serviscope, 3 in., 5 MHz bandwidth, DC coupled, calibrated, little use, very good cond., $150, or consider exchange in part or full VHF Tx or Tcvr, or similar. VK2BDW. Ph. (02) 674 1184.

TH6DXX Beam, new cond., complete with 36 ft. galv. mast, $200; Daiwa speech proc., current mod. RF550, unmarked, as new, $100; RTTY mod. 15 teleprinter, good cond., complete with loop circuit, EA mod. and demod. units, $100. VK4ZT, QTHR. Ph. (079) 73 6580.

Yaesu FT101E, latest model, with AC/DC power supply, unused and as new, $695; Barlow XCR-30 receiver, excellent cond., $195; Dick Smith desk mic., 50k cardiod type, $12. VK3OM, QTHR. Ph. (03) 560 9215.

Kenwood TS820S with CW filter, immaculate cond., absolutely unmarked, kept under dust cover, 18 months old, very little use, in orig. packing with factory standard spares, connectors and manual, $880 cash. Ian Cousins VK5IK, QTHR. Ph. Eudunda (SA) 252.

Barlow Wadley XCR-30 Mk. 2, 0.5-30 MHz continuous tune comm. Rx, A1 cond., serial No. 7147, asking a mere $225. Bruce Meldrum VK2ZOT. Ph. (02) 94 7537 A.H.

Multi 7, sell xtals T & R, new, for Ch. 44, or swap for Ch. 47 or 43. VK3WG, QTHR.

Kenwood TS820S, as new, $950; 5 element 10m Yagi, 20 foot beam, $30; 11 element 2m Yagi, 20 foot beam, $30. Phone Barry (02) 99 4993 after 6.30 p.m.

Antenna Hustler BTV-4 Trap Vertical, 4-10m, ex. cond., transverter 432/144 by "Micro-Modules" Eng., as new, Spectronics digital readout, suit Yaesu FT101, etc., 10m Swiss quad, exc. performer. Ph. (03) 240 1231; A.H. 509 8637.

Thinking of a change of climate? A superb amateur site is available with elevation of 1700 feet and view of entire Gold Coast. It has 360 degrees clear for HF beam and access to 4 repeaters on 144 MHz. Site is level, ready for building and avocados planted. Details Steve Grimsley VK4CQ, 25 Honeyeater Drive, Burleigh Waters, Q. 4220.

Hygain Hy-quad, 2 element triband, unused, cond. as new, $250. Don Campbell VK2DAC, 22 Paul Avenue, St. Ives 2075. Ph. (02) 440 8382.

Power Supply, RCA TV Camera, WP168, solid state regulated metered, max. 350V at 2A, $35; Bendix freq. meter, BC221AK, Aust. version with inbuilt AC power supply, as new cond., $75; Bendix MP22B, large genemotor, 25/28V to 540V at 450 mA, regulated and remote control, with modulator 6N7, 6F6, PP807s, $25; power transformers and chokes, large, $1 ea.; valves, ancient and modern, $1.50 ea. VK3DS, QTHR.

WANTED

Facsimile (FAX) Machine for reception of WX satellite pictures (Tiros-N Meteor and GMS-1), will buy, borrow or lease, or can anyone suggest source for this; please give details style of operation. Chris Maxworthy VK2NDX. QTHR. Ph. (02) 449 6681 A.H.

Prospective Novice wants information, please, from amateurs regarding their experience with commercial aerial tuning units for use with end-fed wires. Richard Jenkins, 88 Companion Cres., Flynn, ACT 2615.

6m Transverter, suitable FT101B or IC502 with lin. amp. FM rig, older valve type OK, g.w.o., rtps. 2, 8, UHF equipment anything considered in g.w.o. VK7WD, 30 Beddome St., Sandy Bay, Hobart 7005. Ph. (002) 38 8432 Bus., (002) 25 3873 A.H.

VFO for FT75B and/or DC power supply, also buy or borrow handbook or any info on Cossor scope 1049 Mk. III. VK2BXW, 209 Maitland Rd., Hexham, NSW 2322.

American Vibroplex, in good working order, by enthusiast CW operator. Write Harry VK2NSR, Box 1084, Coffs Harbour 2450. All letters answered. Ph. (066) 54 1536.

ACI Marine Tcvr or similar, solid state, 12V DC, 2-12 MHz, SSB tcvr with broadband, final stages and continuous freq. coverage. G. R. Hovey VK1HG. Ph. (062) 88 1111 Bus., (062) 82 4485 A.H.

EXCHANGE

USA Amateur planning to visit Australia soon (time is somewhat flexible, having retired) would like correspond with VK amateur visiting USA, about exchanging house, car and amateur gear for duration of visits. Paul Bowden W7PQE, 4207 Kroum Rd., Yakima, Washington, 98901, USA.

STOLEN

Yaesu FT221 2m All Mode Transceiver, removed from my vehicle at Mt. Gambier (SA) on 17th June, 1979; serial No. 6F307750; had Icom IC202 mic. connected (rewired to be compatible); U310 FET pre-amp on RF board; front right-hand catch on top cover bent; DC power cable taken; believed thief comes from Geelong, Victoria; any information to police. Thanks VK5AVQ.

TRADE HAMADS

QSL Cards, Log Books, Contest Sheets — send 20c stamp for samples and prices to Linda Luther VK4VV, PO Box 498, Nambour, Qld. 4560.

Are you on frequency? Be on frequency with DSI. Full range of top quality counters up to 1300 MHz. 0.1 parts per million accuracy. Quik-Kit 50 Hz-550 MHz counter kits, 95 per cent assembled, 100 per cent tested, 12 months part warranty, AC or DC operation, 8 digits ½ inch LED, accuracy 1 part per million. Special introductory price $135, incl. postage. Write for further info or check ads in American QST, Ham Radio, etc. Australian distributors ATN Antennas, Box 80, Birchip, Vic. 3483.

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes. ■

Have you checked your Call-Sign on the Address Label?

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. A. R. PETTIFORD	**VK2BAX**
Mr. E. A. ISAACS	**VK2ABO**
Mr. J. MOYLE	**VK2OZ**
Mr. M. E. SNEDDON	**L20957**
Mr. G. WILDE	**VK5GX**
Mr. F. R. WILLIAMS	**VK3FW**
Mr. J. BILLING	**L50427**

OBITUARY

Mr. BERT HADDREL VK3BBH

Bert lived in the city until he retired when, for health reasons, he moved to the beautiful little town of Harrietville in north-east Victoria, where he was a fairly active amateur operator. During 1978 he had several trips to hospital and on October 4th last he passed away.

Bert will be missed by his many friends in Australia and around the world and by those in the Ex-G Radio Club in particular.

E. "Steve" Stephenson VK5ZB. ■

Mr. PAT IRWIN VK4FI

It was with deep regret that we recorded the passing of Pat on 23-4-79 after a long illness.

Pat was born on 27-10-14 on the west coast of the south island of New Zealand and there he obtained his amateur licence in 1926 at the age of 11.

He served as a Major in the New Zealand Army during World War 2 in the Pacific Islands and was mentioned in despatches.

After the war he remained as medical officer in the Cook Islands and Western Samoa and was looking after some 200/300,000 people. Pat continued to operate his radio during these years.

Ill-health forced Pat to return to New Zealand and in 1960 he came to settle in Australia at Coolangatta.

Pat is well remembered by locals and visitors to the Gold Coast of Queensland for his cheery 8 a.m. "Good Morning Session", which he continued to run almost up to his passing.

All amateurs extend to his wife, Betty, and family their deepest sympathy.

F. Eastick VK4VN. ■

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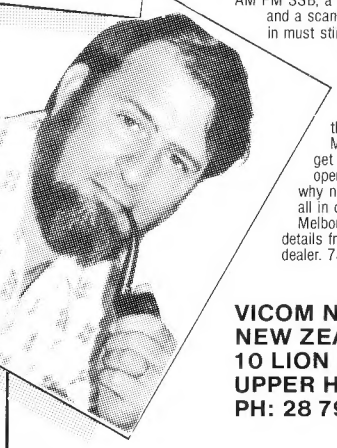

Duncan Baxter, VK3LZ, is the Vicom Customer Manager, ready to offer a cup of coffee and help with technical queries. Duncan is an important member of the Vicom Salesteam — famous for friendly personalised service.

IZNIBS —

Why the small print you ask. Well, we figure that advertising sometimes needs a variation from photos and prices. Having read the editorial, why not a little relief in a paid advert, while you wait for the tram or train that never comes!

We at Vicom are pretty excited at some of the new projects and lines scheduled for the months ahead. With 4 amateurs in the firing line and 3 others due to take their vows in August, it's difficult not to be otherwise when you see what's coming up. Reaction to the new TONO — 7000 CW/RTTY do-everything-except-keep-the-log has been tremendous and the excitement in seeing hitherto meaningless CW appear on a TV screen is just as fulfilling as your first QSO! Any TV will do from 1 to 27 inches. For those wanting to interface for hard copy provision is made and even the log keeping bit can be done if you have a personal computer — it's all there!

On the transceiver side the new ICOM 511 for 6 meters has the opposition licked AM FM SSB, a couple of memories and a scanning function all built in must stimulate the enthusiasm for the next summer season. Apart from that it looks fine lined up with the 211 for 2 and the 701 for HF!

Maybe you'll have to get an extension on the operating table — but why not? Drop in and see it all in operation if you're in Melbourne or get the details from your nearest dealer. 73 IZNIBS.

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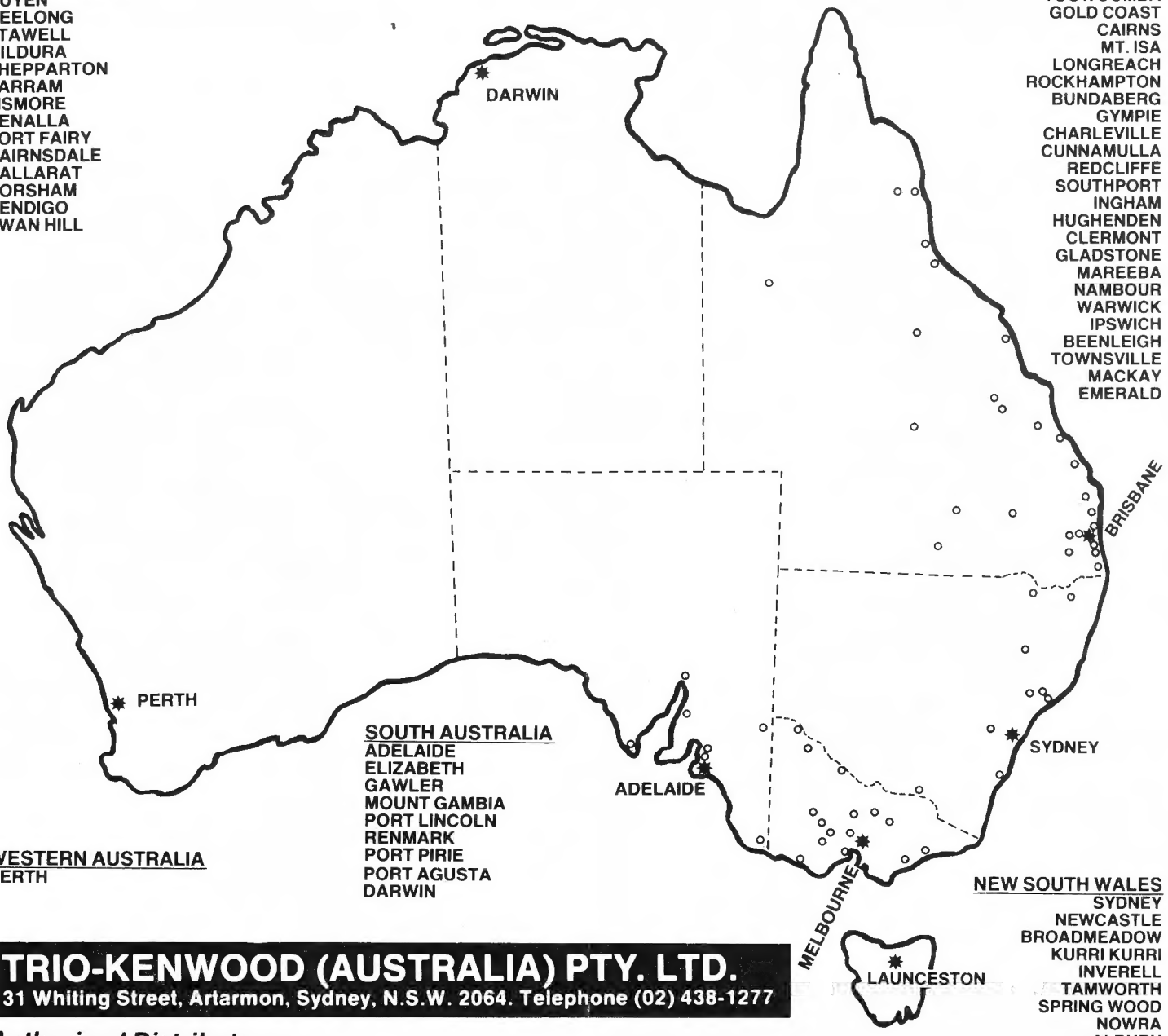

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